

S. Hob.

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EDITED BY
H. K. SWANN.

pref

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ONE PENNY.



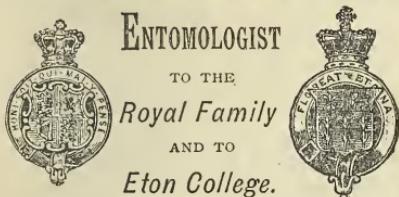
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VOL. I, No. I.

JULY, 1892.

ONE PENNY.

TO OUR READERS.

On presenting the FIRST NUMBER of the NATURALISTS' JOURNAL, we beg to thank those among our subscribers and contributors who have assisted us in its production. At the same time we may say that there remains a great deal yet to be done to make this venture a success. We may ask our friends to help us in this respect by making the NATURALISTS' JOURNAL known everywhere among their friends and correspondents.

OUR BRITISH REPTILES.

HE reptiles undoubtedly constitute one of the most neglected zoological groups in this country. This is very remarkable, considering that their habits are so interesting and the specimens themselves so easily procured and preserved; for the latter purpose all that is required being pure spirits of wine, clear glass bottles or jars with tightly-fitting corks, and these articles are all cheap enough to prove no bar to even the most penurious person to take up their pursuit.

We have in the British Isles no fewer than seventeen different species of reptiles, a good collection of which, exhibiting all their varieties and metamorphoses, would be well worth possessing.

In order to create a little interest in these curious creatures, and induce readers, if possible, to undertake the formation of a collection of them, I have penned a few remarks concerning the various forms found in this country. To all, however,

who desire to dive deeply into the study of our native herpetology I would recommend the following two books, namely, Bell's "British Reptiles" (second edition), and Lord Clermont's "Quadrupeds and Reptiles of Europe."

Reptiles are divided by all modern specialists into two great groups or sections.

SECTION I.—REPTILIA.

The reptiles proper may be distinguished from the amphibians by their possessing scales on their bodies in addition to many other points ; they constitute the mailed knights, as it were, of the reptile empire ; the other class or section comprising the unarmoured host which have no such protection from their enemies.

Three orders are represented in the British Isles.

Order Chelonia.

This order consists of the tortoises and turtles, two of the latter, both marine species, being included in the British list on the strength of the occasional occurrence of a few specimens on the coasts of our islands. These are the hawk's-bill turtle (*Chelonia imbricata*) and the leather-back turtle (*Sphargis coriacea*).

The first named constitutes the tortoiseshell of commerce, which is produced from the shell or carapace, which in large specimens measures about two feet in length. The other species, namely, the leather-back turtle, inhabits the Atlantic Ocean and Mediterranean Sea, and its shell possesses seven long projecting ridges along it, separated by grooves.

It is not very likely that many of my readers will come across specimens of either of the above species.

Order Sauria.

This group includes the lizards, of which we have four species (including the slow-worm.)

The common or viviparous lizard (*Zootoed vivipara*) is probably familiar to every practical naturalist. It is a very agile and graceful creature, frequenting most sandy heaths throughout this country. Its usual length is from five to six inches. I possess a specimen in my collection, however, which measures fully seven inches, which was found by myself some years ago in Sutton Park, near Birmingham, where I may remark it is pretty plentiful.

The sand lizard (*Lacerta agilis*) is a much more local species than the preceding, but is very common in certain places in the South of England. It is less agile and more bulky in appearance than the common lizard, its colour being sandy

brown with black spots, each having a white centre; greenish-coloured specimens are, however, of common occurrence. It measures from seven to eight and a-half inches in length.

The beautiful green lizard (*Lacerta viridis*), which is so abundant on the continent and in certain of the Channel Islands, is now believed to be indigenous to this country, and is undoubtedly by far the most beautiful of our British reptiles. Its total length is from twelve to fifteen inches, and it is generally of a bright green hue, although its colour varies considerably according to the situation in which it is found. Large numbers of this pretty species are imported into this country from Guernsey for the purpose of keeping in conservatories, their price ranging from one shilling to eighteen-pence a-piece.

The slow-worm or blind worm (*Anguis fragilis*) is included in the present order, as it possesses anatomical characters more closely resembling the lizards than the snakes, to which it undoubtedly bears a superficial resemblance.

This creature is oviparous, producing from seven to twelve young. It is common in many different localities in this country, and its average length is from twelve to eighteen inches.

W. HARcourt BATH.

(*To be continued.*)

THE BELTED BEAUTY (*Nyssia zonaria*).

My first acquaintance with the above very local moth occurred some years ago, when I was just nicely working up the insects for my collection. Every Good Friday entomologists may be seen on the Whallasey Sandhills, near New Brighton, engaged quartering over the ground in search of the above-named insect. Some years ago the insect could have been picked up by the hundred by those who knew where to look for it, and it was no uncommon sight to see one female surrounded by a ring of a dozen or more males, attracted by the scent which the female emits in order to attract the male to it. As soon as the female received the advances of a male the circle was broken up, and the males dispersed in order to seek fresh conquests. The male is a very handsome insect, and is to the eye of the naturalist rather conspicuous on the ground; the female being wingless, is rather harder to find, and when fresh from the chrysalis appears only to crawl up some grass stem, and there await

the coming of a male. The eggs are laid in stems of grass, &c., the female preferring to deposit its eggs between the inner and outer covering of the star grass, but other plants are used for this purpose, especially if there is a convenient crevice for the purpose. The caterpillar appears to feed on the low plants of the sandhills, and in confinement may be reared on knapweed.

For several years I have visited the sandhills to search for this insect, sometimes returning without any, once with one only, another time with half a dozen, and so on, the numbers varying season after season. This Good Friday the insect was fairly common, the females appearing to outnumber the males, so that those who wished to breed the insect would have very little trouble in getting a batch of eggs. The insects are to be sought for on the ground; a net is unnecessary, as the male rarely flies in the daytime—evening is the time when this is done. This is one of the insects which may be safely packed two or three in a box without injury, the insects being torpid in the daytime; and the scales are not rubbed off the wings as soon as many other moths, the reason being they are smaller and not quite so loose and numerous as other sorts. The insect is rather difficult to rear from the egg, but with care and attention this may be done.

Bolton, June 16th, 1892.

F. W. PAPLE.

BIRD LIFE ON EPSOM COMMON.

ALTHOUGH only fifteen miles from London, Epsom Common is a fairly good field for all classes of naturalists; it is of considerable extent, and fairly well wooded in some parts, and also possesses some small tracts of marshy land and water which abound in many specimens, winged and otherwise, desirable for the cabinet of the collector. The greater part of the common is, however, covered with gorse and bracken, with occasional bushy thickets.

To-day I started out early in the afternoon for a ramble over the common. The first birds I noticed were the whinchats and stonechats, but I could not discover any of their nests, although they are undoubtedly still engaged in nidification. Soon after I flushed a nightjar from almost under my feet, and it flew leisurely away, skimming just over the furze, and flying so slowly that my dog chased it for some distance. I found the egg it rose from almost instantly; it was in a little open spot among the furze, surrounded by a fringe of bracken, and lay in a slight depression upon the *débris* of furze needles

and fern, there being no nest whatever. The single egg is glossy, white, beautifully marbled with pale purplish and warm brown. Proceeding onward, I visited a marshy pond which abounds in moorhens, and here I found what appeared to be a new nest of one of these birds, but it contained no eggs. Here also I found the cinnabar moth (*E. jacobæa*) to be quite common. In a low bank, and partly concealed by a little furze bush, I discovered a willow warbler's nest containing four fresh eggs. Down in a low-lying tract of grassy land I came on a pair of lapwings which, from their behaviour, may possibly have had eggs or young somewhere, although I failed to discover the whereabouts. I noticed that the male several times alighted upon a grass-grown ant-heap, which on examination I found was trodden down and covered with droppings, and had evidently been frequently resorted to by the bird. While searching around here, I found an old nest of the lapwing containing one runt egg, which had evidently lain there some time, as the contents smelt slightly while I was blowing it. This egg is in colour and markings similar to the usual eggs of this bird, although somewhat nest-stained, but in size it is very much less than the average, measuring only about $1\frac{1}{4}$ in. by $\frac{7}{8}$ in. In a little copse near here I startled a nightingale from a bush in which was the commencement of a nest of one of these birds. The nightingale seems to be quite abundant on the common and its vicinity, there being a pair located at intervals in almost every thicket; just now, however, most of the nests contain young, there being but one brood in a season, and that early. The cuckoo also is very plentiful on the common, and maybe frequently seen and heard; the red-backed shrike, too, is fairly common, and breeding.

A man residing on the common showed me to-day stuffed specimens of kestrel, sparrow-hawk, barn owl, tawny owl, green woodpecker, hawfinch, brambling, tree-sparrow, goldfinch, bullfinch, and others, all shot in the neighbourhood.

June 13th, 1892.

H. K. S.

PLANORBIS DILATATUS.

THIS is, perhaps, the most local of all the British fresh-water shells. It is an American species, and was first observed in this country some twenty-five years ago, in the canal at Gorton, Manchester, and later on at Pendleton. In both cases it was found near the warm water discharged from the condensers of steam boilers belonging to cotton mills. Mr. T. Rogers, of Manchester, who found them, considers them

to have been brought over from America in cotton bales, and so to have found their way into the canal. This continued to be the only known British locality for them until about five years ago, when I was so fortunate as to find them in the canal at Burnley, also near a cotton mill. This seems to confirm Mr. Rogers' theory as to their introduction. I have just visited the locality, and find they are increasing rapidly, as I found them at places along the canal for over a mile. They are most abundant in places where the bank is walled; feeding on a kind of smooth, silky algæ, which grows plentifully in such places. They are a small species, somewhat resembling *Pl. nautilus*, but may be easily recognised by the very large mouth of the shell, which is composed of about three whorls. I have also found them abundantly in a cistern at Gannow, on the top of an engine-house, and fully sixty feet above the canal from which the water is pumped.

F. C. LONG.

32, Woodbine Road, Burnley, Lancs.

THE AUTOBIOGRAPHY OF A SWAN-MUSSEL.

(*Anodonta cygnea*).

"WHERE are you a-shoving to, young fellow? That's the second time my shell has been nearly smashed by one of your heavy lumbering race. Why don't you crawl like another respectable mussel, and not come dropping on anyone in that ungainly fashion? But one must expect it from a person of your low race. Move down further, young man, and don't crowd on me so."

It was a swan mussel that spoke. Autumn had arrived, and the men were weeding the pool. Great heaps of decaying water-thyme lay round the margins; mixed with them were small animals and the like that had been ignominiously dragged out by the large wooden rake of the pond-weeder. In one of these heaps was our friend the swan mussel, who had reached there but a moment before, and who had been so upset by the sudden and unlooked-for appearance of a heavy-shelled *Unio*, which had dropped on the top of her with a crash that came near breaking through her frail ribs. The *Unio* proceeded to clear out of such close proximity to her, and at the same time let it be known to the general race of *Unios*, and for their future edification and reform, that he apologised.

"Madam," said he, opening the two valves of his shell so that his gills could plainly be discerned within, "I am extremely sorry if I have caused you the slightest incon-

venience. The fact is, I had no choice in the matter. I, in company with many others, was suddenly rushed away from my native element in a tangled mass of weed, and the next moment I found myself come near smashing your gracious-looking self."

"I forgive you if that is the case," answered the swan mussel, who was somewhat mollified, if not surprised by his gallantry. "When I came here I adopted the same method of locomotion, and I don't like it. By the bye, that puts me in mind of our present position. When are we going to be removed to the pool?"

"If you please," said a little squeaky voice, "I don't think we ever shall go back," ending with a sigh deeper than would have been expected from such a little creature.

"And who are you?" enquired the swan mussel, in a majestic tone.

"If you please, I'm the *Sphærium corneum*; I'm the common representative of our family. Let me see, there's the *Sphærium revicola* and the——"

"That will do," broke in the swan mussel. "I do not wish to know anything about you or your low family. How do you know that we shall not regain our pool? Answer me."

"We have known it to be a fact in our family for generations, that at this time of the year, if taken out, we should not be replaced. It is a legend, but it nearly always comes true; and I have heard say that Farmer Brown uses us to manure his ground with, and I——"

"What!" shrieked the swan mussel, "oh, that I should ever live to see this day! It may be the commencement of the extinction of our race. It cannot be true! You impudent little thing, how dare you say such things to me, a swan mussel?"

The little *Sphærium* shrank back quaking with fear (if a *Sphærium* can quake), and, unable to make a suitable reply, he did the next best thing, he kept his valves shut.

"I think he is right," said the *Unio*, "I have heard something to the same effect myself: but don't be discouraged, let us die as befitteth our race, and show these small fry the nobility of mind and the unity of sentiment which exists in and between an *Anodonta* and a *Unio*."

H. DURRANT.

(To be continued.)

NATURE always has an answer for him who asks "How?" but silence only for him who queries "Why?"

THE PRACTICAL NATURALIST.

UNDER this heading we propose to give a series of papers on collecting, preserving, &c., specimens for the cabinet. Contributions are wished for upon several subjects—for information address the Editor.

SKINNING AND MOUNTING BIRDS.

BY THE EDITOR.

The following directions are only for making up skins of birds; instructions for mounting specimens for a case will be given in next month's issue. For the purpose of study or for exchange, &c., birds are very much better kept in skins, they can be laid in drawers or in glass cases; and in this state occupy very little space, and are also readily examined.

The tools and materials necessary before the amateur can commence skinning operations are few in number, and of the simplest description. A good penknife with two blades, large and small, which should always be kept as sharp as razors; a pair of strong toilet scissors. A small dissecting scalpel (this is very serviceable), but a good substitute may be found in a slip of hard wood, half an inch wide, and tapering to a thin edge at one end, which should be rounded; a pair of "neck-forceps," for introducing tow or cotton into the neck, are very useful, but a pair of old curling tongs will answer the purpose, or even a piece of wood, which should be pointed at one extremity; needles and thread are also necessary. I may add that the whole of the above articles may be obtained from most of the natural history dealers for the sum of four or five shillings. There will also be required a quantity of cotton wool for stuffing—or tow if preferred—and a tin of preservative. For this latter I would recommend the non-poisonous preservative soap,* which is no more expensive than the arsenical soap—the latter, however, is a good preservative, and easily obtainable.

Having now procured all the requisites, the subject itself must be obtained. This, I may remark, should not be too small a bird to commence with—a rook is a very good subject for a beginner. Examine well the shape and size of the bird before commencing, and make a note of the colour of the iris of the eye, the tarsi, (or feet) and any bare skin about the beak or head. If there are any blood-stains or soiling matter about the plumage they may be removed by washing with a rag or sponge dipped in benzine. Pass a needle and

* A good preparation is sold by Messrs. Watkins and Doncaster, of 36, Strand, London, W.C.

thread through the nostrils ; stuff the throat and nostrils with cotton-wool and also apply the same to any wounds, particularly if in the head ; then tie the bill together with the thread and leave the ends attached. Lay the bird upon its back and separate the feathers down the middle of the body ; take the knife and make a slight incision upon the middle of the breast-bone, then insert the blade beneath the skin and divide it down to the vent ; care must be taken, however, not to penetrate the inner skin which covers the abdomen. Now take the scalpel, and, with the flattened end, separate the skin from the body on each side as far as possible and stuff in cotton wool ; a little plaster of Paris sprinkled on the abdomen, also, prevents the feathers from sticking to it. Press in the legs and separate them at the knee-joint, the first joint visible. Work the skin off down to the rump on each side ; then raise the abdomen, press the tail downward, and separate as near the roots of the feathers as possible without injuring the latter. The abdomen may now be wrapped in a little wool and held in the left hand while the skinning is proceeded with. Push the skin off the back with the scalpel or the fingers, care being taken not to stretch or tear it in any way. When the wings are reached sever them close to the body and proceed to separate the skin from the neck, the skin being now turned inside out. When the skull is reached work the skin off carefully on each side ; the ear will be found to be connected by a small tube—insert the point of the scissors under this and pull it out, do not cut it off. Draw the skin carefully over the eyes and sever the connecting membrane as far from the eyelids as possible ; the opening of the eye will then retain its natural size. Now slice off the back portion of the skull and lay the body on one side. Scoop out the brain and the eyes, and clean off as much as possible of the flesh from the head. Anoint the head thoroughly with the soap and fill the eye-sockets and brain cavity with cotton-wool ; also put a little under the lower mandible. Clean off the flesh from the wing and leg bones, anoint with soap, and wrap cotton-wool around to replace the muscles ; clean off also any remaining flesh or fat from the skin and rub in the soap. Now take hold of the thread attached to the bill and gently work the skin back again ; this is effected by shaking the skin and easing with the fingers ; avoid stretching or pulling it in any way. Lay the skin upon its back again ; tie a thread to each wing-bone, and tie the wings the same distance apart as when they were on the body. Fill the neck with cotton-wool (not in lumps) ; care must be exercised in doing this. The back of the head must be properly shaped and the neck must not be swollen

at the back; the lower part of the neck (in front) should be well filled but kept well compressed at the sides, and the natural hollow on each side near the shoulder must on no account be filled; great care should be taken that the neck is not drawn out longer than in the living bird. Fill the remaining part of the body with wool, tapering it off towards the tail in the natural manner; draw the skin together over the opening, and it may be secured with one or two stitches, leaving both ends of the thread loose. Now tie the legs together with a piece of thread, leaving the ends a few inches long; put the skin nicely in shape with the feathers in order; press the tail back to expand it a little and push it very slightly up into the skin; also press the neck into the skin a trifle and shape it properly. Now carefully place a paper belt around the wings and secure it with a pin. The skin must next be labelled; the label should be pierced and tied to the feet by the thread left for the purpose; it should be only just large enough to write the necessary particulars upon; write upon one side both English and scientific name of the bird, the sex, date of taking, locality, and name of collector; on the other side write the colour of iris, cere (or skin at base of bill) and tarsi (or feet). To ascertain the sex of a bird, take the body, make an incision down the abdomen, push aside the intestines, and near the vertebra will be found two white glandular bodies if a male, or an ovary containing rudimentary eggs if a female. The skin must now be left till it is quite stiff.

(To be continued).

NOTES AND NEWS.

RARE BUTTERFLIES.—A correspondent writes: “In the ‘Bazaar’ for July 8th, ‘F. Bromley Jun.,’ writing from Eastbourne has the following:—‘Since writing the above, my brother and a gentleman from Brighton have both seen *Papilio podalirius* at Robbin Post Lane, Abbot’s Wood. I have seen two full-grown larvæ of *Apatura iris* captured by the same gentleman, and a fine *Argynnis lathonia* from Horsham. Larvæ have been very plentiful here this year.’ What do your entomological readers say to this?’”

TURTLE DOVES IN YORKSHIRE.—On June 30th, 1892, I found a turtle dove’s nest with two eggs, built in a hedgerow near Pontefract Park; it was unfortunately robbed by some boys. During the latter part of 1891 I had a young one brought me by a labourer, who had shot it; they are an uncommon bird here.

Castleford.

C. HAWKINS.

Mr. F. C. LONG, of 32, Woodbine Road, Burnley, has kindly offered to name specimens of British land, fresh-water, or marine shells for readers of the *Naturalists' Journal*, provided stamps are sent for return postage.

WE HAVE received from Mr. E. Edmonds, of the Naturalists' Supply Stores, 31, Park Street, Windsor, a catalogue of his large stock of Lepidoptera, Birds' Eggs, Preserved Larvæ, &c., also a list of living ova, larvæ and pupæ, of which Mr. Edmonds appears to have a great variety on hand.

BOOK NOTES.

WE have received copies of the Naturalists' Publishing Company's interesting series of Natural History publications, which we can recommend to our readers as certainly the best and cheapest yet issued.

The first we take up is "An Illustrated Handbook of British Dragon flies," by the late Editor of the *Naturalists' Gazette*. This is a work which should undoubtedly prove of invaluable assistance to the collector of these extremely interesting creatures, clear and accurate descriptions being given of every species, while there are also chapters on collecting, preserving and rearing dragon flies. This useful work has, we learn, had a very extensive sale.

Another interesting little publication, well adapted for the pocket, is the "Naturalists' Calendar and Weather Guide," compiled by the last-named author. This novel little work contains a vast amount of useful and interesting information, and we can recommend it to all observers of nature.

A series of six useful and well-written handbooks are on "Collecting and Preserving" various natural history objects; "Birds," "Birds' Eggs and Nests," "Dragon Flies," "Land and Freshwater Shells," "Flowering Plants and Ferns," "Freshwater Algæ," are all ably treated by well-known writers. We advise all who intend taking up any of the studies mentioned to send for one of these handbooks.

The "Label Lists" we can heartily recommend; they are nicely printed upon good paper and are evidently just what are needed.

There are also data blanks for labelling birds' eggs, shells, &c., and excellent botanical labels. Collectors who have an eye to neatness and uniformity cannot do better than to use these labels.

The whole of the above works can be procured from the NATURALISTS' JOURNAL PUBLISHING Co., 369, Euston Road, London, N.W. (see advt.).

The trade is supplied by E. W. Allen, 4, Ave Maria Lane, London, E.C.

EXCHANGES.

Articles for Exchange or Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

To MICROSCOPISTS AND OTHERS INTERESTED.—A small quantity of geochidiums in spirits, for distribution, on receipt of tube and return postage.—Address, "Editor."

WANTED.—British dragon flies, grasshoppers, locusts and crickets, especially mole and field crickets. Offered—butterflies and shells, &c.—W. Harcourt Bath, The Woodlands, Ladywood Road, Edgbaston, Birmingham.

DUPLICATE clutches of sooty tern, moorhen, bullfinch, Manx shearwater, little grebe, great tit, blue tit, willow warbler. Wanted other sorts, sideblown and with data.—F. W. Papple, 62, Waterloo Street, Bolton.

DUPLICATES.—*L. glabra, L. palustris, L. truncatula, L. peregra, Pl. dilatatas, Pl. glaber, Pl. albus, Z. nitidulus, H. sericea, H. arbustorum, C. tridens, C. minimum, &c.* Wanted; *H. cartusiana, Bulimus montanus, Cl. rolphii, Z. excavatus, and H. aspersa var. grisea.*—F. C. Long, 32, Woodbine Road, Burnley, Lancs.

WANTED.—Clutches or singles of griffon vulture, falcons, owls, shrikes, great northern diver, brambling, siskin, crossbill, chough, woodpecker, dotterel, great snipe, Caspian tern, and other scarce eggs, sideblown and with data.—State desiderata to F. W. Papple, 62, Waterloo Street, Bolton.

DUPLICATES.—Four hundred species of correctly named British Coleoptera, about 5,000 specimens. Desiderata, Coleoptera, British or foreign, and Lepidoptera.—A. Ford, Claremont House, Upper Tower Road, St. Leonards-on-Sea, Sussex.

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F. W. P., BOLTON.—We are pleased to hear that you intend making the *Naturalists' Journal* known in Bolton.

H. D., WEST BROMWICH.—We are extremely obliged for your kind endeavours towards making this magazine a success. Shall be pleased to receive articles or notes from your pen. We are glad to hear that you consider our magazine is the "one thing that is wanted—a cheap but good natural history paper."

J. F. L., BURNLEY.—We are much obliged for your exertions on behalf of this paper, and the interest you have shown.

NOTICE.—Owing to unforeseen circumstances, the appearance of the NATURALISTS' JOURNAL was unavoidably delayed.

MANY communications are held over this month through want of space.



NOTICES.

Address of Office.—369, Euston Road, London, N.W., to which all communications should be sent.

To Correspondents.—All communications sent for publication should be condensed as much as possible, and written upon one side of the paper only; special care should also be taken that they are kept distinct from letters of a business or private nature. To secure insertion in the following number, they should reach the office by the 12th of the month. No notice whatever will be taken of anonymous communications; the name and address of sender should always be enclosed—whether intended for publication or not. Whenever an answer is required through the post a stamped directed envelope should be enclosed.

Contributions.—Original articles, notes and observations relating to all branches of Natural History are solicited. Interesting items of news, newspaper cuttings, &c., are always acceptable, and will be duly acknowledged. Secretaries of field clubs and societies are invited to send us the reports of their meetings for publication.

Subscriptions, including postage, to the NATURALISTS' JOURNAL are as follows:—12 months, 1s. 6d.; 9 ditto, 1s. 1½d.; 6 ditto, 9d.; 3 ditto, 4½d. Single copies 1½d., post free. All subscriptions date from the current month, and should be prepaid.

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Remittances may be made either by stamps, postal orders, cash, or cheques, as may be most convenient. Cheques and P.O.'s should be made payable to H. K. Swann, and P.O.O.'s payable at Euston Road.

Publishing Notices.—The NATURALISTS' JOURNAL is published on the 25th of each month, price 1d. Copies may be obtained either direct from the publishing office, 369, Euston Road, London, N.W.; or from any of our agents, a list of which will be published next month.

TRADE DIRECTORY.

In this column the names and addresses of dealers, &c., are inserted at the following rates, which should be prepaid, viz.:—For an entry under one heading only, one insertion, 6d.; 3 ditto, 1s.; 6 ditto, 1s. 6d.; one year, 2s. 6d. For entry under each additional heading, one insertion, 4d.; 3 ditto, 8d.; 6 ditto, 1s.; one year, 1s. 8d. No advertisement may contain more than twelve words.

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THE

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A Monthly Medium for Collectors and Students of Natural History.

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Vol. 1, No. 2.

AUGUST, 1892.

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VOL. I, No. 2. AUGUST, 1892. ONE PENNY.

THE AUTOBIOGRAPHY OF A SWAN-MUSSEL.

(*Anodonta cygnea.*)

(Continued from page 7.)

ELL spoken," answered the swan mussel with fervour; "I did not think there was so much sense in a *Unio*. I admire you for it, and it would be better if all your race followed your excellent example, but still the fact cannot be overlooked that a swan mussel is greatly superior both in mental calibre and the majesty of portliness to a *Unio*. Why, the greatest men of the time have written books about us, and you would scarcely believe that there is not a single part of me you can touch but which bears some long scientific name. What you are gazing at now" (as the *Unio* happened to be looking at the only part then visible to him—the exterior of the shell) "is called the *periostracum*."

"Wonderful!" ejaculated the *Unio*, oblivious of the like quality in himself. In fact he had no idea how close their relationship was, nor how similarly constructed were their various parts, with the exception of the shell, or he would scarcely have tolerated such boasting and insolent talk. He had always looked upon the swan mussel as the queen of the fresh-water species, and certainly its great size was perhaps sufficient to warrant his thus thinking.

"If you would like to hear my history," began the swan mussel in a tone which implied that the hearer must consider himself under great obligations to her, if she *did* condescend to do so, "I—"

"Undoubtedly I should, above all things," interrupted the

Unio. So the swan mussel opened its valves preparatory to commencing, and the *Unio* settled himself in a comfortable position, with his single pedal containing his *otocyst* or auditory organ thrust forward so as not to lose a single word. At a respectable distance were gathered various representatives of different families, all intent on recording every word that fell from between the swan mussel's valves.

"Well, then," she began, "you must know that when I first found myself possessed of life, I was very much unlike what I am now. So greatly did I differ that you would not have been able to recognise me, and it would have been very excusable too. I found myself in company with many thousands of others, all like myself, not knowing *what* we were nor *where* we were. Afterwards I found out that we were between the gills of a swan mussel, whither we had passed from the ovary while we were still in the egg, and I was told that there was room in these gills for the accommodation of some three millions of us. Peculiar creatures we were too; each of our valves—for thus early we possessed them—was shaped like an equilateral triangle, but the apex was incurved and toothed like a saw, which I found very useful later on, as I shall show you. We only had one adductor muscle in the place of the two which we now possess, and the foot—ah! how different to the shapely and fleshy muscular one which we afterwards gained. It was scarcely to be called a foot, but from it, rudimentary organ as it was, projected a long *byssus*, which also I found of great service. We were nourished during the time we stayed between the two *lamellæ* of the outer gill by a substance formed in the gill itself, and—"

"In my family," broke in the little squeaky voice of the *Sphaerium corneum*, "while young we were enclosed in a special brood pouch near the inner gill, and *we* were nourished by a secretion from its walls. Sometimes—"

"Tut, tut, hold your tongue, child!" said the swan mussel, in a testy voice. "What do *you* know about it? You are not a swan mussel. Don't interrupt. As I was saying—or about to say—these were very happy times, but they soon came to an end. However, I must not omit to mention that at this period we were termed *Glochidium*, and so little did we resemble our parent that men* formerly thought us to be parasites. Well, time quickly passed, and one day we found ourselves ejected into the surrounding water, and now I found out what a weak, useless little creature I was, not even having power to swim, so that I soon found myself on the muddy

* Rathké and Jacobson.

bottom of the pool. But even before I had reached here I met with an adventure, slight, it is true, but it made me afterwards very careful, for some monster bore down upon me with frightful rapidity, and before I knew what had happened, I had been sucked up and blown out of his mouth again with great force. Reaching the bottom quickly after this occurrence, I lay still for some time and gradually gained in strength until I was able, by flapping my valves, to progress along, though in no very graceful manner. Seeing one of those monsters coming in my direction, I tried to avoid him, but he was too quick for me, and actually brushed against me as he passed.

"Very soon the continued flapping of my valves made itself felt on my delicate constitution, and it was through this that I began to think how happy I should be if I could fasten myself on one of those long animals with which I was surrounded. I should not have to exert myself in swimming about then. How easy I should be carried about from place to place! I determined to put my plan into execution at the first opportunity afforded me, and by good luck I had not long to wait, for soon came sailing by one of the very animals. By means of my long *byssus* I quickly attached myself to his tail. I have since learnt that the animal was a fish called *Leuciscus vulgaris*. There were several more about my age, some of whom I had known in earlier times, all attached in a similar manner, but I did not condescend to notice them—I was too busily engaged in looking after myself; and it was now I found how useful were the two sharp saw-like apices of my valves. I dug them into the substance of the fish, and here I remained for some short time in a parasitic condition. The epidermic cells of my host grew round and enclosed me, and then a remarkable sensation made itself felt all over my body. My alimentary canal was becoming more highly perfected, as indeed also was my whole internal arrangement; my poor, weak, single adductor muscle disappeared, and in its place two new and strong ones appeared at opposite ends of my shell. At this time also my *byssus* vanished, only, however, to prepare the way for the subsequent enlargement of the foot itself. But besides these remarkable changes, very fine filaments began to sprout out of the sides of my body, and soon I found myself in possession of a pair of the most beautiful and delicate organs you could possibly imagine—the gills. After several more changes and additions, including the formation of a brand new pair of valves—which, by looking at the top* of my shell you will still see—I dropped off and sank to the bottom.

"I was now in all respects similar to my parents, whose life

* Umbones.

I was about to adopt, except for the absence of functional reproductive organs. In the beautiful language of my historians and biographers, I was 'a bilaterally symmetrical animal.'

"I found my two adductors very strong and serviceable, and as my shell enlarged, so equivalently did they. At the narrow end of my shell—the posterior—were two siphons tentacularly fringed, which by their constant motion induced currents carrying all kinds of food into my mouth, such as *diatoms*, *desmids*, *algæ*, &c., thus serving at once the double purpose of nourishment and respiration. I dare say you have noticed me as I lay obliquely in the mud, with my posterior end upwards, disclosing the siphons, and you have also, perhaps, wondered at their extreme sensitiveness to the least disturbance in their vicinity, when you have seen them suddenly disappear and the valves close tightly together. Yes, sensibility is one of my chief characteristics—in this part, at least, as you will admit—and the greater amount of development my siphons undergo bears directly on the question of the higher or lower development of my retractor muscle.*"

"And now I must tell you a little about my present noble shell. From the moment I dropped from the fish to the quiet bottom of the pool I commenced to grow. Little by little additions were made to my shell, each successive addition being marked by a separate and distinct line following the general contour of my foundation shell. As my shell approached maturity, the lines began to approach closer together until finally they nearly merged into each other, for the amount of additional matter grew smaller. Some little disagreement appears to exist among my biographers as to the method of formation of my shell. It is generally regarded as a cuticular secretion of the mantle; the cells at the edge forming the *epicuticula*; those of the part adjoining the prismatic layer, and those of the general surface the nacreous layer; for you must understand that my shell consists of three layers, and here" said the swan mussel turning to the *Sphærium cornuum*, "I differ from you, for you have no prismatic layer." The *Sphærium cornuum* shrank back abashed before the majestic looking *Anodonta*, who continuing said "but then we cannot all hope to be swan mussels and I do not despise you for not being one, I only pity you. As I was saying—or about to say—the *epicuticula* or *periostracum* is purely of organic structure, composed of a substance termed *conchiolin* like the organic substratum of the rest of the shell. It is of a horny consistence and laminated and the ridges on

* *Retractor pedis.*

the outer surface of the shell consist entirely of it. Where the two valves meet is likewise composed solely of the substance thus ensuring a much more perfect closure."

H. DURRANT.

(To be concluded.)

A NEW BRITISH EARTHWORM.

WE are constantly finding the old saying confirmed, that in natural history the largest number of species occur in the district which is most carefully worked. This is true of earthworms. One by one the mysteries surrounding this greatly-neglected group of animals are being penetrated, the veil is being lifted, and we are getting more accurate ideas respecting the specific differences, the distribution, and the uses of worms. I have recently been fortunate enough to find more than one species new to Britain, but for the present I shall be content to describe the one which I have most carefully studied. So little is known about many of the worms imperfectly described by the earlier authors, that I shall not now discuss the synonymy of this species, but give it the name applied to it by the author, who alone has fully and accurately described it (*Allolobophora profuga*, Rosa). To no one are we more deeply indebted than to Dr. D. Rosa, of Turin, for our present knowledge of the European *Lumbrici*. His lucid descriptions, shrewd discernment of points of value, generous recognition of the work of others, and indefatigable industry, are models which we could wish every helminthologist would imitate. In 1884 this veteran worm-hunter published a booklet entitled *I Lumbricidi del Piemonte*, in which he described four species of *Lumbricus*, and a dozen species of *Allolobophora*. Among them we find the worm which forms the subject of this paper. Dr. Rosa is the only writer whose works I have studied who notices the differences in point of size, length, and number of segments between worms collected in the South of Europe and those found in more northerly latitudes. I had already noted the fact that in some instances worms become smaller as we go southwards — a fact which will account for the differences between certain species of English worms and their Italian representatives. With us the Rover, as I propose to name this worm, is 60 or 70 mm. when of medium size, but sometimes reaches fully twice that length, and is then about 80 mm. in alcohol, with a diameter of 5 to 8 mm. The number of segments is about 120-150. The worm is cylindrical, having

much the appearance of the Turgid Worm (*A. turgida*, Eisen), but the hinder part is more angular in outline, owing to the disposition of the setæ. The colour is ashy-grey, clayey, or fleshy-brown, with clay-coloured girdle. Owing to the greater transparency of the integument, the head appears rosy or flesh-coloured, while the anal extremity is quite yellow in fresh specimens, due to the presence of a golden liquid, which it emits when placed in spirits. The segments which contain the essential organs are paler than the rest, and from these also some specimens exude a coloured fluid. As the possible connection of this exudation with sexual relationships has never yet been studied, it is impossible at present to say whether the quantity varies with the maturity of the worm. My own researches have led me to think this is the case, and that the matter should be investigated from that point of view.

The head is small, and cuts nearly one half of the first segment, whereas in the genus *Lumbricus* it forms a perfect mortise and tenon. The male pore is on segment 15, and is seated on either side on prominent, pale, opaque papillæ. The girdle extends over 6 segments (30-35), and stands well out from the body. It is closely fused on the back, but beneath the segments can be very clearly distinguished. The band which constitutes the puberty pores (*tubercula pubertatis*) stretches along the under surface of segments 31-34, and even when the clitellum is as yet unformed the position of this band in relief serves to mark off those segments from the rest. The setæ are disposed differently from those of the true earthworm (*Lumbricus terrestris*, L.) and the related species. Rosa states the arrangement thus: "The space between the inferior and superior pair of setæ is a little less than that between the ventral setæ, but nearly (or about) double that between the dorsal. The medio-ventral space is double that between the setæ of the ventral pair; the dorsal space is double the first, and six times that between the dorsal setæ." A diagram is necessary to make this point clear to the un-initiated. There are papillæ on the underside of segment 25 or 26, which are in some way connected with the sexual organs. Internally we find four pairs of seminal vesicles, those in segments 9 and 10 fixed to the anterior side of the septum, and in 11 and 12 on the posterior face. There are two pairs of spermathecae in segments 10 and 11, which open in the intersegment 9-10, 10-11 in the direction of the third row of setæ; and I am able to confirm Dr. Rosa's later statement to the effect that the opening is in the segment containing the organs, and not in the preceding. I have as yet found no spermatophores on this species.

This worm emits an odour, which, on account of its suggestiveness of garlic, is anything but agreeable. I have referred to the value of the smell and mucus in aiding worms to mate, in a paper on "Hybridity among Worms," published in the "Field Club." This worm is found in fields and gardens, under clods or stones, and is by no means rare. I have collected it in, or received it from several parts of the country.

Since the foregoing was sent to press I have received from Dr. Rosa specimens of the Italian worm upon which his description is based, and find that our British species correspond in every essential with the type. I should like once more to appeal to naturalists for collections of worms, especially from mountainous districts. They should be placed in tin boxes lightly filled with soft moss, and accompanied by any data likely to be of service.

Idle, Bradford.

HILDERIC FRIEND, F.L.S.,
Author of "Flowers and Flower Lore," &c.

OUR BRITISH REPTILES.

(Concluded from page 3.)

Order Ophidia.

THIS Order comprises the snakes, of which we possess three representatives, namely, the Viper (*Pelias berus*), the Ringed Snake (*Tropidonotus natrix*), and the Smooth Snake (*Coronella laevis*).

The Viper can be easily distinguished from the two harmless snakes by its having a zigzag black band down the back. It seldom exceeds two feet in length; the largest specimen that I have in my collection was captured by myself in Sutton Park, near Birmingham, on the 2nd April, 1883, and measures twenty-three inches in length. Although this species is poisonous, I have never heard of a human being dying from the effects of its bite. I have known, however, of several fatal cases in connection with dogs; a large retriever belonging to a friend of mine was killed by one of these venomous creatures in Sutton Park a few years ago. I have encountered this species in great numbers in the Forest of Dean, in Gloucestershire, Wyre Forest in Worcestershire, and elsewhere.

The Ringed Snake is in most parts of this country less common than the Viper, but in the New Forest in Hampshire I have seen it in great abundance; it may be most frequently met with in open spaces, in woods particularly,

where there are brushwood and faggots piled in stacks ; it also may often be encountered in the vicinity of water. It glides along with a very rapid motion, and unless taken by surprise will soon make good its escape. The total length of this species is about three feet, but large specimens have been known sometimes to reach as much as four feet. It is very variable in colour.

The Smooth Snake is a very rare and local species in this country. It may be readily distinguished from the Ringed Snake by having its scales round, whereas in the more common species they are oval with a keel. The Smooth Snake seldom exceeds two feet in length. It has been captured occasionally in the New Forest and elsewhere in the South of England.

SECTION II.—AMPHIBIA.

The members of this class are chiefly distinguished from the REPTILIA by the fact of their undergoing their metamorphoses in water. They form a connecting link between the true Reptiles and the Fishes.

Order Anoura.

This Order comprises the tailless amphibians, namely, the Frogs and the Toads, of which we have four representatives in the British Isles.

The common Frog (*Rana temporaria*) is probably sufficiently known to everyone not to need notice here. A second species called the Edible Frog (*Rana esculenta*), is also common in certain parts of this country, particularly in the fen district of the East of England. It utters a very loud croak, which in Cambridgeshire has obtained for it the name of the "Cambridgeshire Nightingale." It may be distinguished from the common Frog by the absence of the black patch on the side of the head near the shoulder, as well as by several other points. This creature is well known in connection with cook-shops on the Continent.

In addition to the common Toad (*Bufo vulgaris*), which is familiar to every reader, we have another species, namely, the Natterjack, or Rush Toad (*Bufo calamita*) ; this is of a light yellowish brown colour, clouded with dull olive, with a light line running down the back. It is a very lively creature, and runs with the body considerably raised. It is very local, but is usually common wherever it occurs. I have seen it in tolerable abundance at Herne Bay, in Kent. It principally inhabits dry situations.

Order Urodela.

This Order includes the tailed Amphibians, known as the Tritons and Newts, of which we have four different kinds

inhabiting this country. Of these the great crested Triton (*Triton Cristalus*), is the largest species, measuring about six inches in length. It is of a blackish brown colour, with a reddish belly, and is common in most ponds. It does not often quit the water, though it may be seen sometimes crawling over the land before a thunderstorm, or on the approach of rain. Rural folk call this species the "Ascal."

The Smooth Spotted Newt (*Lissotriton Punctatus*), is by far the commonest species of its family in this country. It inhabits nearly all ponds of clear water in the spring time, but in the summer and autumn it may be found most frequently in damp places on the land. It often enters cellars, and in dry weather has been found in gardens buried several inches in the soil. Its length is from three to four inches, and it is exceedingly variable in colour, the male being generally very much spotted.

The Palmated Newt (*Lissotriton palmipes*) resembles the preceding in appearance; it is, however, only a little more than half its size, and is a very local species in this country. In the spawning season the hind feet of the male are completely webbed.

A fourth British species of Newt is the Banded Newt (*Omnatotriton vittatus*), which has a wide black-edged white streak on each side of its body and tail, besides possessing several other peculiarities. It is a very rare and local species in this country.

W. HARCOURT BATH.

THE PRACTICAL NATURALIST.

Under this heading we propose to give a series of papers on collecting, preserving, &c., specimens for the cabinet. Contributions are wished for upon several subjects—for information address the Editor.

SKINNING AND MOUNTING BIRDS.

BY THE EDITOR.

(Concluded from page 10.)

THE following directions will serve to illustrate the method employed in mounting specimens for the cabinet or other purposes, but it is almost needless to remark that any degree of perfection in the art of mounting is only acquired by means of continued practice and perseverance. The additional materials required for mounting specimens consist merely of a quantity of wire (annealed), of several gauges, and a few bottle corks of sizes proportionate to the birds in hand; also artificial eyes of the requisite kinds, which may be procured from any taxidermist.

The directions for skinning should be followed until the neck has been returned to its proper position and filled with cotton wool or tow, and the body is ready to fill. Now take a piece of wire, of a gauge proportionate to the size of the bird and twice the length of the latter, and sharpen it at one end; push it through the root of the tail and longitudinally through the centre of a cork, then pass it up the neck and press the end through the crown of the head and leave it projecting an inch or two beyond. The breast and upper part of the body may now be filled with wool, but care should be taken not to press it in in lumps. Now take two shorter wires, sharpened at one end, and pass them through to the soles of the feet and up the legs and press into the cork; they should then be bent to form the natural joints of the limbs. The skin may now be carefully filled down to the vent, and any little deficiencies also corrected; small portions of wool may be introduced to parts which are lacking in shape; and a little pressure will remedy any bulging; then carefully sew the opening up and insert the artificial eyes, but do not allow them to protrude in an unnatural manner. The bird may now be fixed (by the wires in the feet) on a piece of board, if to be represented standing, or a branch if perching. In fixing the attitude of the specimen the amateur will find it well to have a good illustration to work to, or what is better, a well-mounted specimen; the head must be carefully finished off, and the plumage neatly arranged, and a wire should be passed through each wing into the body to keep them in place. Care must be taken to have the attitude of the bird when mounted quite natural. The wire projecting under the tail should be bent to afford support to the tail and tips of the wings. The specimen must now be left until quite dry, when all projecting wires must be cut off.

With regard to the number of specimens required, if one is forming a collection of birds, I may say that a pair of adult birds of each species (with the addition of immature birds or interesting varieties) would be quite sufficient for any collection. No true naturalist collects specimens merely for the sake of *possession*.

A FEW specimen copies of the NATURALISTS' JOURNAL will be forwarded free to any correspondents who will kindly undertake to distribute them among their friends. Apply to the publishers, 369, Euston Road, London, N.W.

A SPECIMEN copy of the NATURALISTS' JOURNAL will be forwarded post free from the office on receipt of three halfpenny stamps.

NOTES AND NEWS.

MR. F. C. LONG, of 32, Woodbine Road, Burnley, has kindly offered to name specimens of British land, freshwater, or marine shells for readers of the NATURALISTS' JOURNAL, provided stamps are sent for return postage.

THE PRINCIPAL LONDON AGENTS for the NATURALISTS' JOURNAL are as follows: W. P. Collins, 157, Great Portland Street, W.; W. Longley, 12, White Hart Street, Catherine Street, Strand, W.C.; E. Sumner, 135, Oxford Street, W.; H. T. Booth, 38A, Upcerne Road, Chelsea, S.W.; W. J. Cole, 226, Great Portland Street, W.; F. H. Butler, 148, Brompton Road, W.

NOTES FROM EPSOM.—On the 31st July last, a Cirl Bunting's nest containing 3 much incubated eggs, was found near Epsom; this is rather local as a breeding species in the vicinity of London. On the same day the Editor netted a specimen of *Colias edusa* there, and saw several other individuals, and on the following day caught a number of Ringlets (*E. hyperanthus*), which were quite abundant at one particular spot on the common.

THE APTERYX, Kiwi, or wingless bird of New Zealand seems destined to meet the fate of the Dodo and Great Auk at no very distant day. One dealer informed us the other day that he had received no less than twenty-two skins of this already rare bird in one consignment. Several species of this genus are known.

WE have received a copy of the *Malden Natural History Gazette*, which useful little periodical is issued monthly by the Malden Natural History Society; copies may be obtained from the Secretary, R. Scott, Malden House School, New Malden, Surrey.

MR. W. HAROURT BATH, 195, Ladywood Road, Birmingham, writes to say that he will be pleased to name and identify specimens of British dragonflies, earwigs, cockroaches, locusts, grasshoppers and crickets, provided stamps for the return postage be sent. Mr. W. Harcourt Bath, we may remark, has recently been dubbed by *Science Gossip* "our chief authority" on those interesting insects, the dragonflies. We are informed that he possesses very extensive collections of both *Odonata* and *Orthoptera*, which are open to inspection by the readers of the NATURALISTS' JOURNAL at any time.

WE have received Mr. W. P. Collins' Scientific Book Catalogue, No. 27, containing a large series of works relating to every branch of Natural History.

BOOK NOTES.

SKINNING AND PRESERVING BIRDS.—This is the title of a useful handbook, by the Editor of the NATURALISTS' JOURNAL, to be published in September. It treats of skinning and mounting birds by a well-tried method, which never fails, with sufficient practice, to produce the most excellent results. It will be printed on good paper and illustrated. The price of this handy little work will be 3d., postage $\frac{1}{2}$ d. extra ; it will be ready by the 15th of September, and all orders, accompanied by three penny stamps, received before that date, will entitle the sender to a copy, post free, forwarded on day of publication. Copies may be obtained from the NATURALISTS' JOURNAL Office, 369, Euston Road, London, N.W.

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ANSWERS TO CORRESPONDENTS.

W. H. B., BIRMINGHAM.—The contributions shall have our attention.

J. F. L., BURNLEY.—Received.

J. B. B., Lowestoft.—S. C. Blake, 20, Market Place, Great Yarmouth, sells this journal.

A. F. G., STRATFORD.—Received ; shall be inserted.

G. B. L., BRIGHTON.—Pratt and Sons, naturalists, Queen's Road, sell this magazine.

IN ORDERING this magazine through a bookseller or news-agent, please mention our agent's name and address, viz., W. P. Collins, 157, Gt. Portland Street, London, W.

Specimen



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Contributions.—Original articles, notes and observations relating to all branches of Natural History are solicited. Interesting items of news, newspaper cuttings, &c., are always acceptable, and will be duly acknowledged. Secretaries of field clubs and societies are invited to send us the reports of their meetings for publication.

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SEPTEMBER, 1892.

ONE PENNY.

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VOL. I, No. 3. SEPTEMBER, 1892. ONE PENNY.

OUR COMMON BRITISH DRAGONFLIES.

E have in the British Isles as many as forty-five different species of these magnificent insects, including about a dozen of casual or accidental occurrence.

One of the best known species is *Platetrum depressum*. This curious creature can be distinguished at a glance from any of its relations by being in possession of a very flat, broad and depressed abdomen. The male is of a cobalt blue colour, the female being of an olivaceous hue. It is common in the vicinity of most ponds during the summer time.

One of the prettiest species found in this country is *Leptetrum quadrimaculata*, which has a blackish spot on the costal margin of each wing. The lovely variety *Prænuhila* has in addition a brownish cloud or fascia near the apex. It is somewhat local, but tolerably common wherever it occurs.

Orthetrum cernuescens is another familiar species belonging to the same family as the two preceding. It somewhat resembles *P. depressum* in colour, but in size it is considerably smaller, its abdomen being also a good deal narrower.

Sympetrum vulgatum is undoubtedly by far the commonest member of its family in this country, abounding almost everywhere in the South of England, as well as in many other parts of the British Isles. A closely allied species, namely *Sympetrum Scoticum* is also plentiful on moors in many parts of the country, more especially in the north, and it is the smallest member of the genus to which it belongs.

Cordulia ænea is a most magnificent creature, being of a rich

metallic green colour, and it is a beautiful sight to see it in its native haunts, darting about in the sunshine like a brilliant meteor. It delights chiefly in moist woods.

Gomphus vulgatissimus and *Cordulegaster annulatus* are beautiful velvety black insects, striped and spotted with rich yellow. The former is chiefly to be found in the south of England, while the latter possesses a predilection for mountain streams, and is principally to be met with in the north. It is a very large and powerful species.

Æschna grandis is one of the most majestic insects which occurs in the British Isles, measuring nearly five inches in the expanse of its wings, which are of a rich red or rusty hue. Two closely allied species, namely *Æ. juncea* and *Æ. cyanea* are very common dragonflies, the former more especially in the north, the latter in the south. Their mazy aerial evolutions cannot fail to have attracted the attention and admiration of every reader of the NATURALISTS' JOURNAL during his rural rambles in the summer time.

Two of the most beautiful species of dragonflies occurring in this country are *Calopteryx virgo* and *C. splendens*, both possessing rich metallic bodies and pretty coloured wings. Both of these lovely creatures abound in the vicinity of most streams during the summer months.

The *Agrionidae* are a numerous family of small dragonflies. *Lestes sponsa* is of a metallic green colour, *Pyrrhosoma minium* is of a crimson hue, striped and spotted with black and yellow, while *Enallagma cyathigerum*, *Ischnura elegans*, *Agrion puella* and *Agrion pulchellum* are little blue and black species, which are all more or less abundant in moist meadows and other places in the vicinity of water.

Full descriptions of all the above beautiful insects, together with an account of their habits and metamorphoses, &c., will be found in my "Illustrated Handbook of British Dragonflies," which will be seen advertised elsewhere in the columns of this excellent magazine.

W. HARCOURT BATH.

IN SEARCH OF SHELLS.

LOCH WHINYEON is just four miles distant across the moors from Gatehouse. I had never been there, but when a friend remarked to me one day that there were numerous bogs and mosses on the way up, I determined to go. I set off one morning about seven o'clock, full of expectation, and with the intention of having a real good day on the moors in search of shells, and if possible to add some new specimens to my collection.

I have left the town behind me now, and as I turn a bend in the road I come in sight of Loch Lee bridge. A member of the feathered tribe occupies the parapet, and is busy hammering away at something which the distance prevents me from seeing. I take out my glass to have a look at him. It is a thrush, busily engaged in cracking what appears to be a shell. Apparently he has succeeded, for I can see his head go up as he gulps down the dainty morsel and flies away. On arriving at the bridge the remains of the shell shows that he has been regaling himself with a *Helix nemoralis*. I peep over the parapet and a frightened water-ouzel darts away up stream. But what is that moving about amongst the withered bracken close by the side of the stream? At first sight I thought it was a black water rat, but closer observation shows it to be a mole. It is not often one has the opportunity of seeing him above ground. He wanders about as if in search of something, and I notice he takes great care to keep himself hidden as much as possible. A cart is coming up the road, the noise frightens him, he bolts into a hole in the bank and I lose sight of him. I am sorry for this, as it will doubtless be some time before I again have the opportunity of observing his movements in the same manner. Along the road side in the hedges I notice a good many specimens of *H. nemoralis* and *H. aspersa*. I pick out some of the *H. nemoralis* and find amongst them a few var. *hybrida*. I bag these, as I am in want of a few specimens, and proceed.

The sun, which has been hidden all the morning by a dull leaden sky, has just come out, and it promises to be a fine day. Numerous butterflies begin to flutter about, and bird life becomes more active. I now branch off the high road, and follow the footpath which leads across the moor to Loch Whinyeon. The heather is just beginning to bloom, and in a few weeks all the surrounding hills will be clothed in purple. A covey of grouse gets up in front of me and fly away westward. I turn to watch their flight, and see them settle at some distance below me. Birds appear to be plentiful here, and sportsmen in this locality will doubtless have some good sport when the time comes round. Proceeding along the slope of the hill I notice, just a few yards ahead, an adder coming towards me in a most lazy and unconcerned manner, and I stand still to watch his movements. Apparently he disregards my presence, for he comes on as if determined to pass. He wriggles past within a few inches of my right foot without taking the slightest notice of me. I speedily check his onward career with a gentle tap from my walking stick on the head and tail, and then pick him up, and stow him carefully away in a box until I got home, where I can examine him at leisure.

I strike off to the right now, and a short distance ahead I see the bog where I expect to begin operations. As I enter the bog a snipe gets up and flies away northwards in his usual awkward zigzag manner. And now business begins in earnest, as I stoop down to pick up a shell which lies on the damp moss before me. It is a specimen of *Lymnea palustris*, and I feel greatly encouraged by the find, as it is the first I have picked up in this district, although I have searched it in the most assiduous and careful manner. Down I go amongst the rushes, bogbean, sundew, butterwort and numerous other plants which constitute this veritable marsh garden. I search diligently for a few more specimens of *L. palustris*, but I find it is far from plentiful. I add *Succinea elegans* to the list, and beautiful specimens they are too. I have found this last-named species in several places in this locality, but none so fine as these. A little farther on, where water is more plentiful, I find a variety of *L. peregrina* in considerable abundance. I cannot name this at present, so I must leave it until I reach home. I drag my net along the sides of a deepish hole, lift it out, and examine the contents. The three species before named predominate, but one I can see is entirely different. It is *L. glabra*, and is considered rather rare in Scotland. I feel highly gratified and excited by the find. But the excitement abates after spending some time in fruitless search for further evidences of this mollusc's existence here. I try again and again, but fail to bring another specimen to light. I pull up a tuft of moss and examine it carefully. Here I find *Pisidium roseum* in great quantities. I have found this species in almost every ditch and marsh in this locality. I am loth to leave the place without getting another *L. glabra*. I dip in my net for a final sweep, only to find a few *Lymnea peregrina* and about half a dozen young newts with only the front legs developed. I have spent some time here, so I must be off to the Loch and try my luck there.

On reaching the top of the hill I turn round and feast my eyes on the magnificent view that meets my gaze. Down in the valley lies the quiet little town of Gatehouse, while the sea stretches far away towards the south. It is now almost high water, and a couple of vessels in full sail glide slowly out of the mouth of the River Fleet, bound in all probability for Maryport for a fresh cargo of coal. Westward, on a prominent hill rising directly up from the sea, stands the monument of the celebrated Charles Rutherford, while below it I can see the woods in which he held his services during those dreary days of the Covenanters. But I must push on. I reach Loch Whinnyeon and find it just what I expected. There is not a tree visible near it, and the water itself almost

destitute of plants. I drag my net along the sides of the Loch only to find a few specimens of *L. peregrin*. I try again and again with a like result. It is useless wasting time here, so I determine to cross the hills and get on to the Little Fleet where I hope to bag some specimen of *Unio margarifer*, and perhaps be rewarded with a pearl for my trouble.

H. MACKAY.

(*To be continued.*)

NOTES ON FISH IN CAPTIVITY.

THE undermentioned observations are made upon fish kept by me in a large glass-sided tank, inhabited by a jack and some perch, dace, roach, barbel and sticklebacks.

First and foremost comes the jack. It has now been with me nearly two years, during which time it has consumed a large quantity of food, for its voracity is really remarkable. In length it is about eighteen inches, and appears to have grown about three inches during its captivity. Its food consists of frogs, small fish and an occasional gold-fish by way of a luxury. Gold-fish are its favourite food, and as soon as one is placed in the tank the jack leaps through the water at it with great eagerness and devours it.

A number of sticklebacks have been introduced from time to time, and although they do not seem to be a favourite dish with the jack, yet when pressed by hunger he will clear them out one by one, but only slowly. The jack on several occasions had been struck on the head when rushing after these little fish by coming in contact with the sides of the tank. After a time he seemed to wish to avert this, as he would only pounce upon them when in the middle of the tank, and the little fish on their part seemed to know his purpose, for they would keep in small bands quite close to the sides, and woe to any straggler that strayed to the centre.

Yellow coloured frogs the jack likes best, and refuses to look at the darker coloured ones, although perhaps hungry. At various times, perch, dace and roach are introduced. The dace and roach, on seeing the jack, go scuttling along as if wanting to hide from their enemy, but not so with the perch; they go sailing by the pike with their spinous backs raised up as much as to say, "We are protected by these prickly spines; you will not attack us, you know our spines will prick you." This jack however will make a meal of the perch, but not until after he has consumed all the other fish and is downright hungry; then he will seize on the perch, spines and all.

The sticklebacks now come under notice; they are pugnacious little fish, having a great propensity for fighting, especially during the breeding season. During last breeding season a number of these fish were put with the jack, and although earlier in the year the jack had eaten them and chased them with impunity, yet now they turned upon him and the males attacked him with great ferocity, using their side spines with great effect, and in the space of three days had almost killed the jack, so that I was obliged to catch and take them out, otherwise I am certain that in another twenty-four hours they would have settled him. The sticklebacks were now put into a globe by themselves, and here they took up separate stations and fought each other with their wonted fury. I then introduced a female stickleback distended with spawn; they did not attack her, but kept rubbing against her, in all probability to make her deposit her spawn.

Some large barbel are kept in the tank with the jack, and also a large Prussian carp; these fish are too large for the jack to interfere with. The barbel are shy and retiring in their habits, and in searching for food would turn up the sand, &c., at the bottom of the tank. The carp is so tame that he will rise to the top of the water to allow his back to be stroked, and will take food from the hand.

A. F. GATES.

THE BIRDS OF HIGHGATE WOODS.

HIGHGATE, although scarcely five miles from the great metropolis, is one of the prettiest and most rural parts in the north of London. It is thickly wooded with oak, elm and beech trees, the four principal woods being Bishop's Wood, held by the Ecclesiastical Commissioners; Kenwood, which is on the estate of Earl Mansfield; Gravelpit Wood, belonging to the London County Council; and another wood which is the property of a farmer. All these woods are inhabited by a great number of birds, but the greater part of them consist of the smaller species, such as the tit family; of this we possess all the British species with the exception of the bearded tit (*P. biarmicus*) and the crested tit (*P. cristatus*). The long-tailed tit (*Parus caudatus*) may be said to be a common bird with us.

There is, perhaps, not a better place around all London for nightingales (*Philomela luscinia*). Bishop's Wood possessed five pairs this year, and there were several in the other woods. Three or four nightjars (*Caprimulgus europaeus*) have

been shot here this year. It is rather a rare bird in this locality, as there are no heaths and commons in Highgate where it can nest. The wryneck (*Iynx torquilla*) may be heard in early spring with his wild cry announcing the approaching summer. The treecreepers (*Certhia familiaris*) are very busy running up and down the trunks of the trees, uttering at the same time their curious *quit*, *quit*, and peering into every crevice and cranny after the habit of the Parine family. I have seen three varieties of the Picidæ, viz., the greater spotted, lesser spotted and green woodpeckers. The kingfisher (*Alcedo ispida*) a few years ago might be seen sporting himself around the ponds here, but I am afraid it is fast verging on extinction in this neighbourhood. Hawfinches (*Coccothraustes vulgaris*) are exceptionally common here. I actually saw one of these handsome birds caught and killed by a cat. How the cat got close enough to spring on the bird is a mystery, it being so wary that it is very rarely you can get within gunshot of it. Red backed shrikes (*Lanius collurio*) visit us every year and build in our thickets. Redstarts (*Ruticilla phoenicurus*), whinchats (*Patincola rubetra*), wood warblers (*P. sibilatrix*), willow wrens (*P. trochilus*), bullfinches (*Pyrrhula vulgaris*) and goldfinches (*Carduelis elegans*) may all be met with in these woods.

I may add that I have just found a wren's (*Troglodytes vulgaris*) nest in an old hat here. The curious part is that it was quite open at the top, and I have never heard of one being built like it before. It contained three young birds.

B. R. HARRISON.

Highgate.

THE PRACTICAL NATURALIST.

Under this heading we propose to give a series of papers on collecting, preserving, &c., specimens for the cabinet. Contributions are wished for upon several subjects—for information address the Editor.

COLLECTING AND PRESERVING BIRDS' EGGS AND NESTS.

By H. T. Booth.

THE collecting of birds' eggs for the purpose of scientific research and other information as regards the domestic economy of nest-building, egg-laying and incubation, are admitted by most scientists to require more care and discrimination than the collection and study of specimens in any other branch of Natural History.

The collecting of specimens goes but a short way towards

the study of oölogy; something more is needed than the mere excitement of the discovery of a species, or nest, or egg, new to the collector. The bird itself, its nest and other things connected with it, should furnish much matter for thought and study on the part of the collector; and to make this collection, or the thoughts and discoveries of any real use, the collector or student should keep a journal or diary, wherein should be entered full particulars and details of his finds and observations. Every collector should keep his journal up to date, and properly indexed to aid him or others to make easy reference to any notes it may be necessary to consult.

The requisites for collecting and preserving next require our attention. It should be particularly noted that personal character has a great deal to do with the making or marring of a collector when engaged in his search for nests. Unless he has a quick ear, a sharp eye, a good share of pluck and patience, and is able to endure a more than average amount of rough travelling and fatigue, he has but a poor chance of becoming a successful nest-hunter. Supposing a collector (or would-be collector) comes fairly up to the mark as regards these points, there still remain other necessaries to complete the outfit, but as nearly all these can be made at home, or procured to order from any dealer in Natural History apparatus, it may be safely assumed that a start will be made in due course.

First of all comes a box or tin to place the eggs in, and carry them safely home, and to aid their safe transmission a plentiful supply of cotton-wool will be found almost indispensable; wrap each egg separately in a piece of cotton-wool and then in a piece of soft paper.

An egg scoop is a very handy article for getting at eggs in out-of-the-way places, such as holes in banks or trees, behind rocks, large stones or in corners of barns, &c.; it can easily be made by taking a rather soft piece of iron wire and bending one end round so as to form a coil, which can be depressed or flattened at will. When not in use the whole can be folded up in so small a compass as to easily go in an ordinary pocket. Climbing irons are in some cases indispensable, especially where much tree climbing has to be done; as it is impossible for the collector to make these himself, he must certainly buy them, and in so doing he should see that he gets a thoroughly reliable article, well made, and with hardened steel points. I have often found a piece of looking glass very handy indeed, when out nesting; by its means I have been able to ascertain whether certain nests contain eggs or not, without the labour of cutting branches, or a hard struggle into the middle of a thick bramble or whitethorn. The looking glass is fastened to

a piece of wire, which is in turn fastened to one end of a stick, which should be long enough to be of practical use. Where cliff-climbing has to be done, a good stout rope is of great service, and when possible the rope should be fastened around a post driven securely into the ground some distance from the edge of the cliff. The rope should always be fastened around the body of the person who is making the descent. Great care should always be taken when letting the rope run over the edge of the cliff, so that it does not get cut or become frayed by friction against the sharp edges of the stones.

The time of year when nests of the different species should be sought for differs, of course, more or less according to the locality and season ; but for all that it can be taken as a rule that the time when nine-tenths of the year's collecting has to be done, is from the beginning of April until the end of June. There are, of course several of our resident birds, such as thrushes, robins, rooks, &c., which nest in March, and, if the weather is very mild, even in February, but these are exceptions.

(*To be continued.*)

NOTES AND NEWS.

THAT entertaining writer, Mr. Arthur Patterson, is, we notice, contributing to the *Eastern Daily Press* a series of articles on "The Fishes of East Anglia." Mr. Patterson is well known as a writer on popular Natural History, and is a great authority upon matters piscatorial.

THE DEATH'S-HEAD MOTH AT HAMPSTEAD.—It may interest your readers to know that a perfect specimen, fresh from the chrysalis, of the Death's-head Hawk Moth (*A. atropos*) was found by my workman in the Elledale Road to-day, and is now in my possession; this is the first specimen that I have seen in this neighbourhood. I remember some years ago, when living at Ashford, Kent, taking several of the larvæ, the season being an unusually warm one. I shall be pleased to show the above specimen to anyone wishing to see it.

Hampstead.

J. E. WHITING.

BIRDS OF THE ISLE OF MAN.—The Isle of Man is indeed a home for the naturalist in search of bird life. Here we have breeding with us the peregrine falcon, kestrel and sparrow-hawk; while barn owls and long-eared owls are common all over the island.

During the breeding season we have, with very few exceptions, all the smaller birds. All the crow family nest here,

excepting the Royston crow.* The raven is pretty plentiful, and last year I knew of four nests within a radius of three miles; all of these, with the exception of one, reared their young, as they could not be got at. The chough is common here, I have seen as many as forty or fifty in a flock. Strange to say we have only two kinds of gulls breeding here, viz., the herring gull and lesser black-backed gull, though we have plenty of other kinds which come to visit us but not to stay. Razorbills and guillemots are numerous and breed commonly.

Peel, Isle of Man.

J. HANNAH.

"SKINNING AND PRESERVING BIRDS."—Copies of this useful little hand-book may be obtained from the office of this magazine, price 3½d., post free.

COLIAS EDUSA IN HERTS.—During the last month, August, all the clover and lucerne fields in this locality have produced *Colias edusa* in great abundance; they have not, so far as I can hear, been noticed here before. I have also netted two specimens, male and female, of *C. hyale* on a patch of waste land adjoining a clover-field.

Sawbridgeworth.

W. TARLING.

THE LESSER TORTOISESHELL BUTTERFLY.—I took a beautiful fresh specimen of this insect (*Vanessa urticæ*) in the Ticket Printing Department of the Great Western Railway, Paddington, London, W. My attention was drawn to the pretty creature by a fellow workman, who exclaimed that a large "moth" was endeavouring to escape through a window-pane, it having, perhaps, gained admission through the open window above. A short time ago I took a Meadow Brown in a railway carriage below our department, which had been put up there for repairs, and was perhaps the conveyance of *janira* from a country resort. Perhaps this was also the case with *urticæ*.

September 3rd, 1892.

J. F. CORDON.

THE NIGHTJAR NEAR LONDON.—Can any reader of the NATURALISTS' JOURNAL say whether the nightjar is common within twenty miles of London during the breeding season, as I have heard many persons say the contrary. Also whether the nightingale or the blackcap arrives first in this country each spring.

E. J. F.

BUTTERFLIES AT WIMBLEDON.—So far this has been a very good season for butterflies; among others taken on Wimbledon Common have been *White Admiral*, *Peacock* (which is unusually rare here), *Brimstone*, *Orange-tip*, *Clouded Yellow*, several *Fritillaries*, *Skippers* and *Blues*, including the rather rare *Holly Blue*.

H. T. B.

* *Corvus cornix*, hooded crow.

IMPORTANT ANNOUNCEMENT.

AMONG the numerous letters we have received expressive of a cordial interest in the welfare of the NATURALISTS' JOURNAL, we have had several suggestions of additions and improvements, most of which, however, had already been entertained by us. Among the first improvements which we contemplate effecting are a typographical alteration in the latter part of the magazine, which will prove equivalent to an addition of about a page of reading matter; also the reservation of a quarter of the front page for a display of the contents of the magazine, as in the present issue, together with occasional illustrations to the articles. We have decided to carry out these and other improvements as soon as we have secured 100 additional subscribers, so that if 100 *yearly* or *half-yearly* subscriptions are sent in before the 12th of October, the *next issue* of the NATURALISTS' JOURNAL will be rendered doubly attractive and interesting. It is evident that if only a fraction of our present readers would endeavour to procure one new subscriber each, our object would be at once achieved. We may add that all subscriptions date from the current month, and do not include back numbers, which should be paid for extra, if required.

FOR SALE AND WANTED.

Charges for advertisements:—first twenty words, 5d., and every additional four words, 1d. When a private number is used, 2d. must be added for forwarding answers, the address then not being charged for.

LEPIDOPTERA.—Fifty British butterflies and moths, thirty different species, many scarce; well-set; in box, post free, 4s. Forty North American butterflies, all good and well-set, post free, 7s. Approval.—A, 1.

BIRDS' EGGS AND SKINS.—Nest and four eggs, American robin, 1s. 6d. Nest and one egg, slate-coloured junco, 1s. 6d. Fine skin American goshawk, 9s. Twelve skins, small species, all good, approval, 12s.—A, 2.

EXCHANGES.

Articles for Exchange or Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

WANTED.—“Birds of Middlesex,” by J. E. Harting; offered, British or North American Lepidoptera, or birds’ eggs and skins.—Editor, NATURALISTS' JOURNAL.

WANTED.—British dragonflies, grasshoppers, locusts and crickets, especially mole and field crickets. Offered—butterflies and shells, &c.—W. Harcourt Bath, The Woodlands, Ladywood Road, Edgbaston, Birmingham.

DUPLICATE clutches of sooty tern, moorhen, bullfinch, Manx shearwater, little grebe, great tit, blue tit, willow warbler. Wanted other sorts, sideblown and with data.—F. W. Paple, 62, Waterloo Street, Bolton.

DUPLICATES.—*L. glabra*, *L. palustris*, *L. truncatula*, *L. peregra*, *Pl. dilatatus*, *Pl. glaber*, *Pl. albus*, *Z. nitidulus*, *H. sericea*, *H. arbustorum*, *C. tridens*, *C. minimum*, &c. Wanted: *H. cartusiana*, *Bulimus montanus*, *Cl. rolphii*, *Z. excavatus*, and *H. aspersa* var. *grisea*.—F. C. Long, 32, Woodbine Road, Burnley, Lancs.

NOTICE.—Owing to our reserve of the July issue having been considerably reduced, the price of No. 1 has now been raised to 2d.

OFFERED.—British birds, eggs and nests, Lepidoptera, or “Cassell's Storehouse of General Information,” in exchange for a good work on European birds.—H. T. Booth, 38a, Upcerne Road, Chelsea.

FOR EXCHANGE.—Lepidoptera, including many local Scotch species; also birds' eggs. Lists exchanged.—A. Milne, 23½, Hutcheon Street, Aberdeen.

BRITISH BIRDS' EGGS.—For exchange, carrion crow, magpie, rook, herring gull, lesser black-back gull, shag, puffin, razorbill, and others. Wanted, hooded crow, goldcrest and bearded tit, also nests of goldcrest and bearded tit, with data.—E. J. Frampton, 42, Rectory Road, Fulham.

WANTED.—Natural History books and pamphlets of all kinds. I offer in exchange, North American birds' skins and eggs.—H. T. Booth, Upcerne Road, Chelsea.

Limnae stagnalis var. *elegantula* for exchange. What offers in other shells?—H. Durrant, 4, Boulton Road, West Bromwich, Staffs.

WANTED.—Collections of postage stamps. Natural History specimens exchanged.—W. K. Mann, 5, Park Street, Bristol.

ANSWERS TO CORRESPONDENTS.

A. P., YARMOUTH.—Shall be extremely pleased to receive contributions from your pen.

SPECIAL NOTICE.—When ordering this magazine through a bookseller or newsagent, readers are particularly requested to mention our wholesale agent's name and address, viz., W. Longley, 12, White Hart Street, Catherine Street, Strand, London.

15 AUG. 94



NOTICES.

Address of Office.—369, Euston Road, London, N.W., to which all communications should be sent.

To Correspondents.—All communications sent for publication should be condensed as much as possible, and written upon one side of the paper only; special care should also be taken that they are kept distinct from letters of a business or private nature. To secure insertion in the following number, they should reach the office by the 12th of the month. No notice whatever will be taken of anonymous communications; the name and address of sender should always be enclosed—whether intended for publication or not. Whenever an answer is required through the post a stamped directed envelope should be enclosed.

Contributions.—Original articles, notes and observations relating to all branches of Natural History are solicited. Interesting items of news, newspaper cuttings, &c., are always acceptable, and will be duly acknowledged. Secretaries of field clubs and societies are invited to send us the reports of their meetings for publication.

Subscriptions, including postage, to the NATURALISTS' JOURNAL are as follows:—12 months, 1s. 6d.; 9 ditto, 1s. 1½d.; 6 ditto, 9d.; 3 ditto, 4½d. Single copies 1½d., post free. All subscriptions date from the current month, and should be prepaid.

Agents are wanted everywhere throughout the British Islands and abroad for this magazine. Trade terms, 9d. per dozen copies, post free.

Remittances may be made either by stamps, postal orders, cash, or cheques, as may be most convenient. Cheques and P.O.'s should be made payable to H. K. Swann, and P.O.O.'s payable at Euston Road.

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THE

NATURALISTS' JOURNAL,

A Monthly Medium for Collectors and Students of Natural History.

LONDON :

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OCTOBER, 1892.

ONE PENNY.

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NOTES ON THE BUTTERFLIES OF EASTERN NORTH AMERICA.

HE close resemblance which the *Lepidopterous fauna* of Eastern Canada and New England presents to that of North-Western Europe, is so striking as to furnish much matter for reflection for the thoughtful student of nature. During a brief residence lately in the province of Nova Scotia, I was struck by the fact that almost every genus of butterflies occurring in the British Isles was also represented in Nova Scotia ; in several cases the species were identical, while in others the differences were so slight as to be hardly perceptible. If we were to seek for a cause for this similarity, speculation would at once establish the probability of a former communication between the two continents by means of which North America could have been stocked from Europe, and the subsequent lapse of time would account for the present differentiation of species. I believe that several representatives of European forms are also included in the Lepidoptera of Western North America, but I have no work by me to consult in confirmation of this. However, it is certain as we proceed southward the insect life gradually changes until it finally becomes identical with the insect life of tropical America.

Turning for a moment to the *avian fauna*, we find that the birds of the northern coasts of Europe are also common to the coasts of *Eastern* North America—especially those birds that range far to the northward, as ducks, divers, gulls, and birds of prey. Yet there is hardly a European bird to be found on the *Western* coast of North America, and it is therefore evident that the birds of the higher latitudes of Europe have a means

of communication with the Atlantic coasts of North America, or *vice versa*, and the shores of Greenland may be safely pointed out as that means of communication, although I may remark that certain petrels are able to maintain a flight across the open Atlantic, and frequently do so. As to the smaller land birds, some few species inhabiting Eastern North America are identical with, and others only racially distinct from those of northern Europe, and the latter especially support the theory of the existence of a pre-historic communication with the European continent; yet the vast majority of North American land-birds are entirely distinct from those of Europe, and in every way related to those of South America only.

To return to my subject, it can be safely assumed that frail butterfly-life could not pass by means of the Arctic regions (at least, not under their present condition), and few, however strong on the wing, could have accomplished a flight across the Atlantic.* So that probability points to some prehistoric means of communication—some Atlantis now lost beneath the ocean. It may be well to state that the alternative of introduction by the indirect agency of man is set aside by the obvious differences between European and American forms, which can only be the result of a long period of time. Still, it is extremely probable that the small white butterfly (*Pieris rapæ*) has been so introduced. I met with this insect commonly in Nova-Scotia during the early spring, but was informed by my late friend Andrew Downs, (of Halifax, N.S.) that it was unknown there until within the last 20 years, and he considered that it had been introduced from England.

THE EDITOR.

(*To be continued.*)



THE AUTOBIOGRAPHY OF A SWAN-MUSSEL.

(*Anodonta cygnea.*).

(Concluded from page 17)

"THE prismatic layer," continued the Swan-mussel, "consists of numberless polygonal prisms placed long edge to long edge,† and united by *conchiolin*. It is visible close to the margin inside the valves as a dark shagreened border.

* The American species *Danais archippus*, which has of recent years reached our shores, has beyond doubt been introduced by means of some of the many vessels arriving here.

† Obliquely to the surface of the shell.

"The nacreous layer covers the whole surface of the interior, and is iridescent in appearance and very beautiful. It is composed of calcareous laminæ, alternating with organic, and owes its iridescent appearance to the diffraction of light by the free, irregular edges of the calcareous laminæ. Müller believes that our shell increases by the act of intussusception, and mentions as an argument in its favour the fact that the surface of the mantle is separated from the shell over a large area, viz., between the pallial line and the ridge bordering the ligament where the muscles are attached, and between the two adductors; while Fulberg thinks that the organic part of our shell is produced by fibrillation of the cells, so that what with these and many other variable opinions, it is difficult for a swan-mussel to have an opinion at all. Even the ligament which connects the two portions of my shell together is much more complex than it appears on a cursory glance. It consists of two parts—an outer and an inner. The outer is laminated like the *epicuticula*, into which it gradually passes. But the inner part is striated in a radial manner, and consists of fibres composed of two different substances, each reflecting light differently. This inner portion has a ridge, to which are attached the muscles of the foot, thus serving the same purposes as teeth do in your race, my friend," addressing the *Unio*. "Müller regarded the inner-striated portion of the ligament as probably being continuous with the nacreous layer. Sometimes a grain of sand finds its way into our mantle cavity, where, by the deposition of *nacre* round it, we transform it into a beautiful object called by men a pearl,* and which they hold in great value and esteem; but—"

Here the *Unio* interrupted the discourse by breaking in with, "Allow me to correct you, Madam; your pearls have never fetched any high price. It is my near kinsman, the *Unio Margaritifer*, you are thinking of, and whose very name signifies pearl-bearing. One of our historians, named Brown, states that the pearls sent from the river Tay, in Perthshire, where my relation lives, to London, from the year 1761 to 1764, were worth £10,000."†

* They are generally formed in and around the *pericardium*, the name given to the membranous sac enclosing the heart.

† Other instances may be cited. The following are interesting:—Camden says: "Higher up the little river Irt runs into the sea, in which the shellfish, having by a kind of irregular motion taken in the *dew*, which they are extremely fond of, are impregnated and produce pearls, or, to use the poet's phrase, 'bacca concha,' shell berries, which the inhabitants, when the tide is out, search for, and our jewellers buy of the poor for a trifle and sell again at a very great price." The italics are mine. Several old authors mention the formation of pearls by dew as in the above. Julius Caesar came to England for pearls, and Pliny tells us that he obtained enough to cover a breastplate, which he gave to Venus Genitrix, who hung it in her temple at Rome.

"That is of minor importance to me," said the Swan-mussel, majestically; "money goes for little in my family. As I was saying—or about to say—we are the largest fluviatile bivalves which Europe possesses, and naturally we are very proud of the honour. I, myself, am over six inches in breadth; but many others of my race far surpass me in size and shape; for you must know I am the type form of the swan-mussel. Among the many varieties, I must not omit to mention the one called *Anatina*. Some of my biographers have made this into a separate species; but I cannot submit to this indignity on our race without a word of protest. It is enough to make all our seven-inch specimens turn black with rage when mention is made of such a thing. It has no more right to be made into a fresh species than has *cellensis*, *rostrata*, *ponderosa*, and the rest of them. Concerning this latter, its thick, clumsy shell is formed by reason of the large amount of calcareous salts, with which our shells are mostly constructed, held in solution by the water it occupies. Any swan-mussel almost could, therefore, become one, given the necessary conditions of environment. But I am wandering from that which relates more nearly to myself. Just before I was so rudely taken out of the water I was lying flat on my left valve on the soft mud and enjoying the bright sunlight. I was thinking how different I was to others. How beautiful my shell appeared! So different from the dirty brown of a *Unio*. By and by a couple of *Sphæriums* came crawling up to me. They were prospecting for a new house, and knowing how fond they are of the empty valves of one of my dead species, I lay very still with my valves just parted, and listened. 'I think we'll take this one, dear,' said Mr. S.; 'and then if——'". But the remainder of the sentence was lost in space, for just then the heap of weed amongst which they reposed was rudely turned over by the fork of the carter as he loaded up, and so the little party was broken up and separated, and the story left untold.

H. DURRANT.

NEWTS, FROGS, AND TOADS.

At a meeting of the Lambeth Field Club, on Monday, October 3rd, Mr. C. S. Cooper delivered a very carefully prepared lecture on the above subject, commencing his discourse with the Newt. He said there is hardly a clear pond in England where one of the two common species of this lively little creature may not be found; their quick movements when in the water are caused by the tail, the legs are small but help

the tail, as they act as a float. This little reptile may often be seen lying on the top of the water, in which it is exclusively found, to all appearances dead, but when so seen is only waiting for its dinner, which it makes off the tadpole of the frog and the little water flea. This creature, like other reptiles, has the power of changing its skin, which it does by rubbing itself against its surroundings. Another curious power they possess is the ability to replace mutilated limbs, which power has caused them to be much studied. The Frog : This amphibian, the lecturer said, was the most commonly known of all our British reptiles, and he gave many particulars of its habits, one being that from March to April the female lays as many as 12,000 eggs ; but of this immense quantity a few only arrive at the adult size, owing to their having to contend with so many enemies. The Toad : This also the lecturer very fully described, especially in relation to the "old-fashioned idea" of its being able to vomit poison, which idea, he said, arose from a secretion which is produced in the "warty" parts of the skin, and which the toad exudes upon being handled. This fluid is very objectionable to some animals, while to others it soon causes them to suffocate and die. In the breeding season each female lays about 1,900 eggs, but of these only a very few arrive at maturity. The toad was, formerly, much prized as a medicine, and at the present time in China it is sold dried for such purposes.

THE PRACTICAL NATURALIST.

COLLECTING AND PRESERVING BIRDS' EGGS AND NESTS.

By H. T. BOOTH.

(*Continued from page 33.*)

THE best places to search for nests at the beginning of the season are in hollies, yews, and other evergreen shrubs, especially in plantations. Long before the leaves are on the trees, nests of the Crow, Heron, Rook, Magpie, Owls, and Wood Pigeon will be found high up in tall trees in woods or copses. At the end of April in upland moors, swamps, marshes, and unfrequented fields, will be found breeding the Redshank, Coot, Moorhen, Common Snipe, Lapwing, Golden Plover, and other similar birds. At the beginning of May all our resident birds are nesting, and every day fresh arrivals take place, until the latter part of the month, when about the last bird to arrive is the Nightjar.

The collector should now turn his attention to heaths, commons and all places thickly covered with small bushes, brambles, furze and tangled vegetation. After the middle of June there are no nests for which especial search can be made, although it is surprising what a number of eggs the diligent collector comes across: among these may be mentioned the Whitethroat, Sedge-Warbler, Robin, and Yellow Bunting. Ring Doves may often be found with eggs in August.

The foregoing remarks constitute a general outline for the collecting of eggs, but for nests a small bag should be taken; beyond this nothing else is required for the latter. We now come to

BLOWING AND PRESERVING EGGS.

For this we require blowpipes and drills of various sizes for the different kinds of eggs. A good many egg-collectors use brass blowpipes, but for myself I always use a glass blowpipe, excepting for large eggs, such as gulls, &c. With glass blowpipes, unless great care is taken it is quite possible to break off the points, and also with them to break the egg itself; but, on the other hand, one is able to extract the contents of an egg from a hole so minute as to be almost invisible, especially if the egg is a little spotted and coloured.

Take the egg to be blown in the left hand, hold it over a basin *full* of water, and make a small hole on one side (generally the least spotted) with a fine needle. Then insert the point of a drill of suitable size into the hole, and with the least possible pressure commence to rapidly turn or "twiddle" the drill between the finger and thumb; a neat round hole will be quickly formed. Now, with a fine-pointed knife remove the skin or membrane from the edge of the hole; this allows the contents to be more easily expelled. Still hold the egg over the water, and take a blowpipe and place it just at the edge of the hole and blow. If the egg is fresh the contents will flow freely—should it not do so a little water may be blown into the egg and the egg well shaken, this will usually have the desired effect. Having blown the original contents of the egg out, now proceed to well wash the inside by filling with clean water, shaking, and re-blowing until the water comes out as clean as it went in. Quite a number of collectors would then wash out the shell with corrosive sublimate, but after a couple of seasons use I found the benefit of this solution to be more imaginary than real. I remember trying it on a set of Missel Thrush's eggs; it did certainly preserve their greenish hue for a short time, but after exposing them to the light two or three times they faded more quickly than those which were not treated to a dose of the sublimate. Don't forget to place the egg-shell to

drain on a piece of blotting-paper, or a tray of a suitable shape, after blowing the shell clean.

Should the collector have any eggs which are hard set, he will not be able to blow them in the manner described above, but will have to employ a different method to remove the contents. This will consist principally in making a larger hole than usual, and cutting out the embryo with a pair of slender scissors; but, speaking in a candid manner, "the game is not worth the candle," and whenever possible the collector will do well to use a little care and discrimination in taking his eggs. Hard-set eggs have a "dead" appearance, nearly always glossy with the constant sitting of the female bird, not so heavy as a fresh egg, and, in the case of all small birds, with about three or four exceptions, the eggs are opaque instead of being semi-transparent. I have heard that caustic potash dissolved in water will destroy all animal matter in an egg without injuring the shell, but as I have never tried it, cannot speak from experience.

(To be concluded.)

A SHELL HUNT AT THE WREN'S NEST.

ON Saturday afternoon, February 13th last, I paid a visit to the Wren's Nest Hill, near Dudley, for the purpose of collecting shells. This hill possesses the only bit of surface limestone of any importance anywhere near Birmingham—for several miles at least—and is consequently one of the best habitats for snails in this district. It is indeed a veritable shell heaven, although of course it cannot be compared to such a palace of mollusc life as Cheddar and some other places which I have visited in the South of England.

The following is a list of the species which I encountered on this occasion, the majority of these being still in hibernation:—

Vitrina pellucida, sparingly.

Zonites cellarius, not uncommon. *Z. allearius*, not unfrequent; its presence may often be detected by the strong smell of garlic which it gives forth. *Z. nitidulus*, very abundant. I also found one specimen of a very light colour, in which the body whorl is very much swollen. *Z. radiatulus*, scarce. *Z. purus*, a few. *Z. nitidus*, not uncommon. *Z. crystallinus*, abundant under moss. *Z. purus*, a few (this heliciform shell ought, I consider, to be placed in a different genus).

Helix aspersa, a few. *H. nemoralis*, plentiful. *H. hortensis*, abundant; likewise the variety *lutea*. *H. arbustorum*, common in the hedge-rows and lanes. All the specimens occurring here

are of a very sombre appearance, compared with those obtained by myself in other localities; perhaps it is something to do with the "black-country" smoke. *H. hispida*, abundant everywhere. I also obtained one specimen of the pretty variety *albida*. *H. concinna*, a few. *H. rotundata*, very plentiful everywhere. *H. erectorum*, I only found a few "dead" shells of this species, although I sought diligently for the living ones; it must, therefore, be very rare, if not indeed now extinct. *H. caperata*, exceedingly plentiful in certain localities. The beautiful variety *ornata* is also very common.

Bulimus obscurus, sparingly.

Clausilia rugosa, abundant. *C. laminata*, not uncommon.

Cochlicopa tridens, scarce. *C. lubrica*, very abundant among moss and dead leaves, &c.

Achatina acicula, a few "dead" specimens under the soil.

Carychium minium, occurs in thousands under moss in certain damp spots.

This concludes the list, as I did not pay any attention on this occasion either to the slugs or to the freshwater forms.

I may say, in conclusion, that although I have visited the Wren's Nest in search of shells several times, I have never met with such a number of species as I did on the 13th February last.

W. HARcourt BATH.

NOTES AND NEWS.

A FINE FEMALE STORK has been shot in the river Stour, at Mistley, Essex, being the first specimen of the kind captured in the river within living memory.

A RED-FOOTED FALCON NEAR LONDON.—I have just finished stuffing and mounting a very rare and beautiful bird, the Red-footed Falcon or Orange-legged Hobby (*Falco rufipes*). It is a female in mature plumage, and was shot a few weeks ago at Nunhead, S.E., by Mr. T. Brown, ("Young Nimrod"), of the Railway Tavern, Nunhead, and it is now in his collection of British Birds. This Hawk is very rarely met with—indeed there is not a "British killed" specimen in the section devoted British Birds at the Natural History Museum. These birds live to a great extent (if not entirely) upon insects, a fact borne out by the contents of the crop of this specimen, which were only the wing cases of some beetles, and what appeared to be the skins of some small caterpillars. They are no doubt harmless to young game and poultry.

72, Denmark Hill, S.E., Oct. 6th, 1892.

W. E. DAWES.

THE JAY.—I shall be much obliged if any reader who has taken eggs and nests of the Jay, or who has noted the birds themselves, will send me particulars of the same, either by letter or through the columns of the NATURALISTS' JOURNAL.

Upperne Road, Chelsea.

H. T. BOOTH.

THE NIGHTJAR NEAR LONDON.—In reply to E. J. F.'s query in last month's NATURALISTS' JOURNAL, I would remind him that the Nightjar, differing as it does from nearly all other birds, is not *common* anywhere. I generally note a pair each year on Wimbledon Common, Surrey, and I have seen it at Epping Forest. I have no other records near London.

H. T. BOOTH.

E. J. F., in the September number of the NATURALISTS' JOURNAL, asks for information concerning the appearance of the Nightjar near London. I have often seen these birds in Epping Forest in small numbers flying at dusk and hawking for moths, &c. The nearest part to London that I know of where they may be seen is in the Public Park, at Wanstead, which is quite close to the busy town of Stratford in the East-end of London and but a few miles from the City. I have for several summers seen them in this Park, but only in small numbers. They usually arrive here in May and depart in September. As far as this county (Essex) is concerned, they are regular summer visitors, but only sparingly distributed, and I do not believe they are to be found at all common within 20 miles of London.

A. F. GATES.

I cannot say that the Nightjar is common here, but several specimens are shot annually in the breeding season. This place being about five miles from London.

Highgate.

B. R. HARRISON.

[We wish the "several specimens" could be spared, and this useful bird might then be more common than it is. The species is more abundant about Epsom and Ashtead than in any locality nearer London.—ED.]

BLACKCAPS AND NIGHTINGALES' ARRIVAL.—In reply to E. J. F.'s query, I heard the Blackcap for the first time this season on April 10th, and the Nightingale on the 22nd. Of course Highgate being rather a cold spot, they would not arrive here quite so early as in some more southern districts.

B. R. HARRISON.

[The above dates correctly indicate the times of arrival of these birds. The Blackcap has occasionally been known to remain with us throughout the winter.—ED.]

A LOVER OF NATURE writes as follows to the "Daily News" of October 4th.—A cormorant, diving in search of its food, accidentally with the lower part of its beak struck against an open oyster, which immediately closed, and held it fast in its

powerful grip. The cormorant came to the top of the water with its burden, but was unable to keep its head above water, since the weight of the oyster, being over half a pound (the usual weight of a Tenby oyster), destroyed its equilibrium. The cormorant kept up a series of struggles, now being dragged under water, now coming up again, but was unable to dislodge its opponent. Whilst in this state it was seen by a passer-by, and captured and killed. Doubtless the cormorant in the end would have been conquered by its assailant had it not been killed immediately after being seen. Its beak was found to be broken, and the muscles of the throat were much drawn up and contracted by its violent efforts to release itself. Such a case to my knowledge has never been heard of before, and will therefore prove interesting to all naturalists. The bird with the oyster is at present in the hands of Mr. Jefferys, of Tenby, who is preparing it.

LUBRICIPEDA LARVÆ AND THEIR FOOD.—The varied nature of the food of the Buff Ermine Moth is astonishing. Several species of larvæ will feed indifferently on various kinds of "low plants," but you find *lubricipedæ* not only on almost every common weed but even on trees and shrubs. Most remarkable, too, the nature of their food has no influence on their colour. I cannot distinguish the slightest difference between the imagos produced from individuals feeding on lilac in their larval state and imagos produced from larvae feeding on dock and other low plants. It is the same with *Marnestra persicariae* larvæ; moths bred from caterpillars feeding on lilac, red-currant, parsley, rhubarb, horseradish, cabbage, horehound, and various wild plants, do not differ to any extent as far as I can see.

Cambridge.

ALBERT WATERS.

THE BIRDS OF LONDON.—The Editor of the NATURALISTS' JOURNAL intends shortly to publish, by subscription, a handbook (now in preparation) of the birds of London and its vicinity. This work will, as far as possible, include all the species both commonly or irregularly occurring within a radius of some twelve miles round London, with as full an account as possible of their distribution, time of appearance and departure, if visitors, &c., &c.; together with a descriptive introduction and many valuable footnotes. The price to subscribers will be 1s. 6d. (including postage), of which a deposit of 6d. should be paid on application; and as soon as the names of fifty subscribers have been received, the work will be sent to press. Immediately it is issued the price will be raised to 2s., and no more subscriptions received. If further particulars are desired a stamped envelope should be sent.

As many as 4,061 muscles have been counted in the body of a moth.

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EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

WANTED.—Collection of foreign stamps. Offered in exchange, Natural History specimens.—W. K. Mann, Wellington Terrace, Clifton, Bristol.

WANTED.—Stamp collections and Natural History books. Can offer shells and Lepidoptera.—Miss M. E. Pepperell, 5, Park Street, Bristol.

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TO CORRESPONDENTS.

H. M., GATEHOUSE.—We shall be pleased to receive a continuation of the article.

M. J., LIVERPOOL.—Mr. B. Cooke, 21, Renshaw Street, sells this magazine.

NOTICE.—In ordering the NATURALISTS' JOURNAL through a newsagent or bookseller, please give the name and address of our wholesale agent, viz., W. Longley, 12, White Hart Street, Catherine Street, Strand, London.

TO OUR READERS.—Having received only a small number of the 100 additional subscribers asked for in the last issue, we have been compelled to postpone the introduction of illustrations for the present, and also the proposed typographical alteration. We appeal to our readers to assist us in improving and enlarging this magazine, by making it known everywhere as much as possible.

15 AUG. 94



NOTICES.

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To Correspondents.—All communications sent for publication should be condensed as much as possible, and written upon one side of the paper only; special care should also be taken that they are kept distinct from letters of a business or private nature. To secure insertion in the following number, they should reach the office by the 10th, of the month. No notice whatever will be taken of anonymous communications; the name and address of sender should always be enclosed—whether intended for publication or not. Whenever an answer is required through the post a stamped directed envelope should be enclosed.

Contributions.—Original articles, notes and observations relating to all branches of Natural History are solicited. Interesting items of news, newspaper cuttings, &c., are always acceptable, and will be duly acknowledged. Secretaries of field clubs and societies are invited to send us the reports of their meetings for publication.

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THE

NATURALISTS' JOURNAL,

A Monthly Medium for Collectors and Students of Natural History.

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NOVEMBER, 1892.

ONE PENNY.

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ADDRESS OF OFFICE : 369, EUSTON ROAD, LONDON, N.W.

VOL. I, No. 5. NOVEMBER, 1892. ONE PENNY.

IN SEARCH OF SHELLS.

(Continued from page 29.)

HALF an hour's walk "ower the muir's amang the heather," as the song says, and I arrive at the Little Fleet. A startled moorhen flutters awkwardly across the stream, while a heron, one of the most destructive enemies of fish, rises slowly from the water and sails majestically away. I find the water full of empty *Unio* shells, strong evidence of the wandering pearl fisher having been at work. I may here mention that every summer a few men are found wandering through this part of the country pearl fishing and are at times fairly remunerated for their trouble. They invariably sell the pearls to the nearest jeweller, although they never realise more than a few shillings. I now begin to divest myself of boots and stockings and getting into the water I soon pick out a dozen or as fine *Unios* as one could wish to see. After some further search I am rewarded with a few specimens of *Sphaerium corneum*. As the water is rather cold I do not remain long in it and hastily drawing on my boots I begin to open some *Unios*. On opening the third one I am gratified to find the much wished for pearl, and although not large it is certainly very pretty. I am quite satisfied with having found one and stowing it carefully away in a small pill box, I pick up my remaining specimens and proceed homewards.

Walking along the river bank I notice numerous dragonflies of various kinds flitting through the air; some of them are very

COLLECTING PALUDINA CONTECTA.

ON a fine Saturday afternoon in July, I started off in company with my friend, J. W. Briggs—who I am endeavouring to initiate in the mysteries of Conchology—to visit a pond in which we hoped to find specimens of the *Paludina conlecta*. Having got our scoop and other implements ready, with a little scheming we fastened them to the handle bars of our steel steeds. Such articles as are used by the conchologist are not calculated to add much to the good appearance of a bicycle ; we, however, put up with this, and started off. It was a beautiful day, calm, clear and bright. The hedgerows on either side were gay with wild roses and honey-suckle, and here and there the purple flowers of the thistle were just coming into bloom. On our right hand lay the whole of the fertile vale of Sabden, with the Forest of Pendle, dotted here and there with white-washed farm houses, and the old halls ; also the villages Higham, Fence, and Wheatley Lane ; while below we could see the little stream known as Pendle Water, hastening downwards with its load of filth and dirt, from the great town of Burnley, to do its share in polluting the noble river Ribble ; the pamorama being bounded in the distance by the majestic form of Pendle Hill. On our left the view was entirely obscured by the rocky and frowning heights of Hambledon. As we rode at an easy pace along the dusty road, enjoying the refreshing breeze and the smell of the new-mown hay, we could hear the reverberations of the rifles of the Accrington Volunteers practising at the targets at the foot of the hill.

After passing through the village of Huncoat, we found our further progress arrested by a gate across the road. Leaving our machines in the care of some village lads, we took our tackle and after a short walk along a foot-path arrived at the pond. It was a small triangular pond, bounded on one side by a few stunted oak trees, on two of which were boards with the legend :—"trespassers will be prosecuted with the utmost rigour of the law"—not a very comforting assurance this ! However we wanted some shells and were determined to have them, so over the wall we went. We found some difficulty in getting at them, as the sides of the pond were very soft and muddy, and often, in our eagerness to reach a particularly fine looking specimen we slipped over shoe-tops into the mud. The pond was nearly choked up with the American water weed *Anacharis alsinastrum*, on which the *Paludinas* were feeding, along with *Limnaea peregra* and *Planorbis albus*. The scoop brought up a few specimens of *Sphaerium corneum* and *Pisidium pusillum* and these were all the species of mollusca we found. There were

however, innumerable tadpoles of the frog and newt in all stages of development, also beetles, dragonfly larvæ, fresh water shrimps, &c., in abundance; and—what I never saw before—caddis cases made up entirely of young shells of *Paludina*, some of them alive.

Having filled our boxes with shells, and our shoes with water and mud, we returned to where we had left our machines. We found them with the lads solemnly sitting in a semicircle around them, watching them intently, as if they half feared they would start up and run away of their own accord. We made the young urchins happy with the munificent donation of a half-penny each, and then mounted and returned home well satisfied with our success.

32, Woodbine Road, Burnley.

F. C. LONG.

THE PRACTICAL NATURALIST.

COLLECTING AND PRESERVING BIRDS' EGGS AND NESTS.

BY H. T. BOOTH.

(Continued from page 43.)

HAVING blown your egg you can now proceed to label it if you choose, or to write the name on (in ink) instead. The latter is decidedly the best, as there is no fear of labels becoming loose and dropping off; collectors should endeavour to write upon each and every egg they take, as follows:—(a) the scientific name of the species, (b) the locality, (c) the date, and (d) the initials of the collector's name. This once done there is never any difficulty afterwards in recognising an egg, and if a number is attached relating to a note in his journal it will greatly facilitate complete identification. Eggs can be kept almost in any box, whether wood, tin, cardboard, or what-not, so long as they are pretty well protected by wool. The worst possible plan a collector can adopt is to expose them to the light in a glass topped case. There is no doubt about a properly constructed cabinet being the correct thing for keeping eggs in; but I don't favour partitioned drawers. I would rather have the drawer clear of all obstructions so that the eggs could be arranged in their proper positions, which is an impossibility where partitions are used. In cabinets, neatly printed labels with particulars can be pinned down in front of each egg and they look decidedly neat.

Nests require a good deal more room than the eggs alone and for these I prefer shallow cardboard boxes, which are at once handy, light and cheap. Before storing nests they should go through a process of cleansing or fumigation, to destroy all insect life which may lie concealed in them. Thoroughly dusting them through with "insect powder" will be found to answer very well. Should the collector have plenty of accommodation, he might separate the eggs from the nests and thus ensure greater safety; but if not, he will do well to wrap each egg separately in a small piece of cotton wool and place it in its proper nest, together with a short description of the eggs, nest, &c.

Until the collector has had some experience he will be unable to name his own eggs, and will necessarily have to call in some older oölogist to his rescue; in the meantime he may possess himself of a good work on the subject and try to study out eggs for himself. About the best book now in the market for all classes of oölogists is, "British Birds' Eggs and Nests" by F. H. Butler, containing several hundred coloured illustrations of eggs. A very handy book for the pocket of every collector (whether large or small, rich or poor) is, "Birdsnesting" by M. Christy, price 1/- . In conclusion I would ask and advise every person interested in our birds to extend their sympathies abroad, and give their knowledge freely to those who are as yet ignorant of the pleasure and profit which may both be obtained at little cost in the field of Nature.

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*).

KILLING REPTILES FOR PRESERVATION.

Can any reader of the NATURALISTS' JOURNAL tell me the easiest and most merciful way of killing frogs, snakes, etc., for preserving in spirits?
(Miss) L. EDWARDS.

A WHITE STARLING.

While going through a field in order to get on to Skyreburn (a small stream which runs past the now ruined village of Kippletringan, famous in Sir Walter Scott's novel "Guy Mannering"), I flushed a flock of starlings. Taking out my glass to have a look at them, I was much surprised to find that one was a pure albino and without the slightest trace of a single dark feather. The same evening while passing the farmhouse of Borland, I was pleased to observe a sparrow, beautifully speckled with white feeding with others in the stackyard.

Dumfries.

H. MACKAY.

CURIOS NESTING PLACES.

Some most amusing and curious places are at times chosen by our feathered friends for the purpose of their nidification. A very curious instance of this came under my notice a short time ago in a garden at Upminster, in Essex, where a pair of tom-tits (*Parus caeruleus*) had built their nest in an old disused iron pump, the nest being built on the sucker and the birds making their entry through a small hole in the top and their exit through the spout. Another curious instance was that of a pair of wrens (*Troglodytes parvulus*) building in a carcass of a carrion crow which had been shot and hung on a tree as a warning to others. This nest was exhibited for some time in a tavern at Colchester, in Essex.

BLUE TIT.

COLIAS EDUSA IN THE HASTINGS DISTRICT.

I have found this species particularly abundant throughout the district this season; the first specimens I saw early in June and the species gradually became more abundant until August, after this month the numbers began to decrease, the last specimen I saw about the middle of October. I managed to take five specimens of the pale variety *helice* and took another when collecting at Lewes, where the "clouded yellows" were very common but by no means easy to capture; I also found the species common at Eastbourne, but saw none of the pale variety there. Of *Colias hyale* (the pale clouded yellow), I only took four specimens and saw a few more, all in this district. I cannot remember *edusa* being so abundant before, although I found it somewhat common here in August, 1885 and 1886.

St. Leonards-on-Sea.

A. FORD.

SHELLS AT THE WREN'S NEST.

Allow me to supplement Mr. Bath's note, on the above, in the October issue of the NATURALISTS' JOURNAL. As no mention is made therein of the *Vertigos* and *Pupas*, I may say the following are found here, viz. *V. edentula* and *pygmæa*, and *Pupa umbilicata* and *marginata*. Among the *Helices* are wanted the following to complete the list given: *H. rufescens*, *H. pygmæa*, *H. rupestris*, and *H. pulchella* (rare). The var. *lubricoides* of *Cochlicopa lubrica* is present together with var. *dubia* of *Clausilia rugosa* and var. *alba* of *C. laminata*. This last var. is rare here. *H. ericetorum* is very variable in its appearance, and while some years I have taken it almost as commonly as *H. nemoralis*, in others I have only succeeded in finding dead shells. This has been especially marked in this district in the case of the Hay Head (Walsall) locality. Mr. Bath should know his Black Country well, so that I need not say where the above locality lies: if he has not already been there, I would recommend him to take a hasty journey thither as soon as possible and judge for

himself. On the disused canal banks here I have succeeded in obtaining quite a quantity of dead shells for several years in succession, and it is only this last year or so that I have ferreted out the living animal. Both the type and the var. *lutescens* occur here. Several vars. of *Hortensis* and *nemoralis* are to be found at the Wren's Nest, and in the Castle grounds the var. *Studeria* of the latter mentioned. Round the pools in the vicinity *Succinea putris* occurs. The following slugs are also present : *Arion ater* (largest specimens I have ever seen, from under an old tree trunk), *Arion hortensis*, *Limax agrestis*, *L. gagates*, *L. carinatus*, *L. flavus*, and *L. maximus*. In conclusion, is Mr. Bath quite sure that the specimens of *A acicula* were found at the Wren's Nest ? I have searched assiduously, but have never come across the ghost of a dead shell, nor am I at all convinced that it occurs within the district. I apprehend that *Z. fulvus* is meant and not *Z. purus* (as in the text) when mention is made of it being placed in another genus.

H. DURRANT.

NOTES AND OBSERVATIONS FROM ROYSTON.

Last season two distinct clutches of five eggs each were found in one nest of the Whitethroat (*Sylvia cinerea*). These eggs were evidently laid by two birds, one only being seen on the nest, and the eggs were to a certain extent incubated. I blew them carefully and from the appearance of the embryos I believe the eggs of each clutch were laid on the same days and incubation not commenced until all were laid. This is the first instance of the kind I have met with, but it is not an uncommon occurrence for two birds to lay claim to the same nest, and spoil all the eggs. Thirteen quail were recently shot, in one day, about four miles from this town. I believe it to be the greatest number ever killed in one day in this locality. I can answer for the correctness of this statement as they were shot by some friends of mine and on land I have been over for nearly fifty years. The Hooded or Royston Crows have arrived, I saw one to-day (October 18th), and I have noticed for years that the 18th is the day on which they make their appearance in this locality. These birds were at one time very common here, but for the past few years they appear to have abandoned their visits to this neighbourhood ; I expect it is owing to the improved agriculture. The clouded yellow butterfly (*C. edusa*) has been very common here this year ; I have no recollection of having met with any specimens for more than forty years, and then I caught one about a mile from this town. It is true that this has been a great season for butterflies and moths, but bad for bees and wasps. Recently some very large fossil remains of extinct elks, oxen and other animals have been found in the cement workings on the southern border of Cambridgeshire, and they are now in the Museum of the Royal College of Surgeons.

RAMBLER.

INSECT-HUNTING AT WEYMOUTH.

Monday, Wednesday and Thursday—October 10th, 12th and 13th—being the finest of the six and a half days of my stay at Weymouth, my entomological aspirations led me through the various lanes and fields in quest of insects. October 9th being very windy, my hands were more employed in securing my hat than in taking insects, but I managed to secure a Colopterous individual of the Brachelytra group, the "devil's coach-horse" (*Ocytus olens*). On the 12th, I disturbed one specimen of the tortoiseshell (*V. urticae*) on my sudden appearance in a clover field. It settled on the grass with wings outspread, exhibiting the pearly white spot which distinguishes *urticae* from *polychloros* (the large tortoiseshell). "Crane-flies," or "daddy-long-legs," were of course in plenty—ascending on my approach and settling again within a foot or two from where they were disturbed. Those lively little insects the small coppers (*Polyommatus phleas*) were plentiful enough. Whilst in the act of securing a specimen, *Colias edusa* met my gaze. Possessing but one damaged specimen (given me by a non-entomological friend who had visited the same locality in August), I made a dash at it, when lo ! away went *edusa* over the topmost hedges. The same morning, on returning to my lodgings, I met with another specimen and caught it in my hat ; but like many captives the clouded yellow escaped. On the following day I found wasps (*Vespa vulgaris*) plentiful. Dragonflies, also, were innumerable. The sight was a pleasant one : their darting movements and instantaneous turnings, together with the imperceptible velocity of their wings, gave them quite a striking appearance. I managed to secure two specimens during the intervals of sunshine, but my knowledge of these insects is so limited that I shall not venture to name them here. J. F. CORDON.

THE COLLECTING OF BIRDS EGGS : CLUTCHES OR SINGLES ?

Will any of your readers inform me of the advantages, if any, of collecting eggs in clutches, beyond the very slight one of seeing at a glance the number of eggs laid by each bird in a clutch, although this can be seen just as well by referring to one's note book, in fact better, as a supposed full clutch might be taken, when if left it may have had one or two eggs added to it before the bird would have really started incubation in earnest. I contend that clutch collecting is not only cruel, but unnecessary, and I am sorry to see so many oölogists collecting in that manner.

W. N. RUSHEN.

THE bison or American buffalo is now said to be practically extinct, and yet in 1865 there were over 9,500,000 on the plains between the Missouri River and the Rocky Mountains.

NOTES AND NEWS.

NOTES FROM GLOUCESTER.—A very fine male specimen of the Hobby (*Falco subbuteo*) was shot here on October 3rd.

A. L. CLARKE.

SHARKS IN THE FIRTH OF CLYDE.—Two sharks which were caught in the Firth of Clyde the other day turn out to be fine specimens (male and female) of the Porbeagle, or hog-hound shark, so called because it has a snout like a hog and hunts its prey in small packs. The proper habitat of these sharks is the Mediterranean, but they are frequently seen and caught off our western coasts, where they follow the herring. Of the pair in question the female is over eight feet in length, being some 18 inches longer than the male. There is no known instance of this species of shark attacking human beings—in these latitudes, at least.

THE BIRDS OF LONDON.—More than 20 subscribers are still needed before this work is sent to press. The price to subscribers will be 1s. 6d. (including postage), and as soon as 50 names have been received it will be sent to press. For further particulars see No. 4, page 46.

TO OUR READERS.—We wish to thank all those who have assisted us in our endeavour to make this magazine a success, and also those who have expressed their good wishes for the undertaking. The "Correspondence" column introduced this month, will, we anticipate, be welcomed by all our readers. It will also be noticed that in this issue the edges have been left uncut; this will be better done when binding, thus ensuring uniformity of size. As soon as our increasing circulation warrants it, we intend adding an *extra four pages* of reading matter, together with illustrations and a coloured wrapper.

MR. W. K. MANN has forwarded us a catalogue of his extensive stock of Natural History specimens, apparatus, &c. We notice he makes a special feature of conchological specimens, crustaceans, &c. His advertisement will be found elsewhere in our columns.

SPECIAL NOTICE TO READERS.—We shall be much obliged to readers who will kindly send us the names and addresses of naturalists and taxidermists throughout the British Isles who will act as agents for this paper. (Terms, 9d. per dozen copies, post free, on sale or return, quarterly account). This will be the surest way of enabling us to effect additions and improvements in this magazine.

WE HAVE received from MR. A. L. CLARKE, of Barton Street, Gloucester, a priced catalogue of Natural History specimens and apparatus for sale by him. Mr. Clarke tells us he has a very fine stock of Birds Eggs, in clutches and odd specimens, including many rarities and with full data to every clutch.

FOR SALE AND WANTED.

Charges for advertisements:—first twenty words, 5d., and every additional four words, 1d. When a private number is used, 2d. must be added for forwarding answers, the addresses then not being charged for.

WANTED.—“Illustrated Handbook British Birds,” by Howard Saunders; also good book on bird stuffing.—Rowe, Hornchurch, Essex.

BIRDS’ EGGS.—Dartford warbler, 3s.; grasshopper warbler, 1s. 4d.; dipper, 5d.; blue-headed wagtail 5d.; grey-headed wagtail, 6d.; pied flycatcher, 4d.; red-breasted flycatcher, 3s.; nightjar, 1s. 2d.; swift, 6d.; barn owl, 1s. 3d.; kestrel, 5d.; gannet, 8d.; eider duck, 8d.; capercaille, 2s.; turnstone, 2s. 6d.; Bonaparte’s sandpiper, 4s.; Temminck’s stint, 1s. 3d.; roseate tern, 9d.; Manx shearwater, 1s. 10d. Many others at low prices; list sent.—Oölogical Department, Sumner’s Naturalists’ Stores, 135, Oxford Street, London.

BOOKS.—“An Illustrated Handbook of British Dragonflies,” by W. Harcourt Bath, well illustrated, price, 2s. 7½d., post free. “The Naturalists’ Calendar and Weather Guide,” (same author) post free, 6½d. “Skinning and Preserving Birds,” full directions, post free, 3½d.—Office of the NATURALISTS’ JOURNAL, 369, Euston Road, London.

LABEL LISTS.—For birds’ eggs, butterflies, and land and freshwater shells, price, 2d. each, post free. Label list of marine shells, in two parts, price, 5½d. post free. Ditto Macro-Lepidoptera, 3d. post free. Data blanks, 4½d. per 100, post free.—Office of the NATURALISTS’ JOURNAL, 369, Euston Road, London.

EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

OFFERED.—“Naturalists’ World,” 1886 and 1887, unbound, perfect. Will exchange for a good specimen of *Venus paphia* and *V. chione*, or offers in British marine shells.—F. C. Long, 32, Woodbine Road, Burnley, Lancs.

DUPLICATES.—*Pl. glaber*, *Pl. dilatatus*, *Pl. lineatus*, *Z. purus*, *Z. fulvus*, *Z. nitidus*, &c. Wanted: *Vertigo substriata*, or foreign shells of any kind.—F. C. Long, 32, Woodbine Road, Burnley, Lancs.

FOR EXCHANGE.—*Conigera*, *Impura*, *Nictitans*, *Micacea*, *Polidon* (dark var.), *Graminis*, *Gemina*, *Fasciuncula*, *Litrosa*, *Valigera*, *Cursoria*, *Nigricans*, *Tritici*, *Vestiva*, *Confusa*, *Xanthographa* (dark), *Urticea*, *Chrysitis*, *Filipendula*, *Suffusa*, *Ribisaria*, *Numitata*, &c. Desiderata, many moths and butterflies.—William Catto, Cote Town, Bridge of Don, by Aberdeen, N.B.

DUPLICATES.—*Darus, Lucerna, Dahlia, Baja, Adusta, Plantinis, Fulginosa, Purea* (dark), *Basilinea, Oleracea, Gemina, Chi, Suspecta*, and many others. Desiderata, numerous.—Geo. E. Hartley, 34, Castle Street, Aberdeen, N.B.

DUPLICATES.—*Colias edusa, Satyrus semele, Lycaena corydon, Hydæcia nictitans*, and many others. Desiderata, numerous.—A. Ford, Claremont House, Upper Tower Street, St. Leonards-on-Sea.

FOR EXCHANGE.—*Olivella ovyna, Columella nitida, C. laeigata, C. mercator*, and other exotic marine specimens, in exchange for land and freshwater shells.—H. Mackay, 10, Irish Street, Dumfries.

OFFERED.—*Semele, Cardamines, Edusa*. Wanted : *Galathea, C-album*, and others.—C. Coles, 61, Barrington Road, Brixton, S.W.

WANTED.—Collection of foreign stamps. Offered in exchange, Natural History specimens.—W. K. Mann, Wellington Terrace, Clifton, Bristol.

WANTED.—Stamp collections and Natural History books. Can offer shells and Lepidoptera.—Miss M. E. Pepperell, 5, Park Street, Bristol.

WANTED.—British dragonflies, grasshoppers, locusts and crickets, especially mole and field crickets. Offered : Butterflies and shells, &c.—W. Harcourt Bath, The Woodlands, Ladywood Road, Edgbaston, Birmingham.

TO CORRESPONDENTS.

A. R., HORNCHURCH.—Glad to hear you are pleased with the NATURALISTS' JOURNAL ; see "Correspondence."

F. C. L., BURNLEY.—Thanks for your kind efforts on our behalf ; pleased to hear you like this magazine.

J. P. N., ROYSTON.—Received with thanks and shall be inserted ; see "Correspondence."

H. C., MANCHESTER.—Many thanks for your exertions on behalf of NATURALISTS' JOURNAL.

J. F. C., ST. LUKE'S.—See "Correspondence" ; the article had to be somewhat condensed, as our space is very limited.

A. F. G., STRATFORD.—Received and shall be inserted.

IMPORTANT NOTICE.—After next month, we shall publish on the 1st of each month, instead of the 25th, as hitherto, and all contributions should then reach us by the 15th of the preceeding month. Contributions for the December issue should be sent in by the 31st of November.

BACK NUMBERS.—The back numbers may still be had, price, 1d. each, with the exception of No. 1, which is 2d. Postage $\frac{1}{2}$ d. extra, or 1d. for the four numbers.

NOTICES.

Address of Office.—369, Euston Road, London, N.W., to which all communications should be sent.

To Correspondents.—All communications sent for publication should be condensed as much as possible, and written upon one side of the paper only; special care should also be taken that they are kept distinct from letters of a business or private nature. To secure insertion in the following number, they should reach the office by the 10th, of the month. No notice whatever will be taken of anonymous communications; the name and address of sender should always be enclosed—whether intended for publication or not. Whenever an answer is required through the post a stamped directed envelope should be enclosed.

Contributions.—Original articles, notes and observations relating to all branches of Natural History are solicited. Interesting items of news, newspaper cuttings, &c., are always acceptable, and will be duly acknowledged. Secretaries of field clubs and societies are invited to send us the reports of their meetings for publication.

Subscriptions, including postage, to the NATURALISTS' JOURNAL are as follows:—12 months, 1s. 6d.; 9 ditto, 1s 1½d.; 6 ditto, 9d.; 3 ditto, 4½d. Single copies 1½d., post free. All subscriptions date from the current month, and should be prepaid.

Agents are wanted everywhere throughout the British Islands and abroad for this magazine. Trade terms, 9d. per dozen copies, post free.

Remittances may be made either by stamps, postal orders, cash, or cheques, as may be most convenient. Cheques, and P.O.'s should be made payable to H. K. Swann, and P.O.O.'s payable at Euston Road.

Publishing Notices.—The NATURALISTS' JOURNAL is published on the 21st of each month, price 1d. Copies may be obtained either direct from the publishing office, 369, Euston Road, London, N.W.; or by ordering through any bookseller or newsagent. The trade is supplied by W. Longley, 12, White Hart Street, Catherine Street, Strand, London, W.C.

TRADE DIRECTORY.

In this column the names and addresses of dealers, &c., are inserted at the following rates, which should be prepaid, viz.:—For an entry under one heading only, one insertion, 6d.; 3 ditto, 1s.; 6 ditto, 1s. 6d.; one year, 2s. 6d. For entry, under each additional heading, one insertion, 4d.; 3 ditto, 8d.; 6 ditto, 1s.; one year, 1s. 8d. No advertisement may contain more than twelve words.

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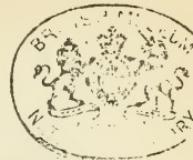
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ONE PENNY.

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be so nearly allied to that of western Europe, might it not be as possible for the Diurnal Lepidoptera of North America to have been derived from the eastern portion of the palæarctic region, as from the western? Personally I think this is much more probable, for then, instead of the insects having to traverse an "Atlantis" three thousand miles in length, they could much more easily have gained access to the new domain by means of Behring Straits. In support of this theory I may say that as many palæarctic butterflies occur in that portion of North America nearest Asia, as there are in that adjoining the Atlantic Ocean.

The number of species of Diurnal Lepidoptera occurring in the nearctic region (which comprises the whole continent of North America, with the exception of Mexico), is, in round figures, six hundred and fifty. It is thus a richer hunting ground for these grand insects than the palæarctic region, which is of much greater dimensions, but only counts about five hundred and fifty different kinds within its limits.

The number of species found in Europe alone is just about three hundred, and of this figure nineteen also occur in North America; while there are as many as twenty-six genera common to both continents, the total number of genera occurring in the nearctic region being seventy-six.

The chief characteristics of the Diurnal Lepidoptera of the North American continent, consist in the following:—1st. there is a "beautiful brigade" of large swallowtails, numbering in all twenty four species; 2nd. the *Pieridæ* present a fine array of forms; 3rd. the *Lycenidæ* and *Nymphalidæ* are about as numerous in proportion to their European relatives, but 4th. the *Satyridæ* do not appear to be so well represented, while 5th. the *Hesperiidæ* form the most numerous family of North American butterflies, the number of species belonging thereto constituting more than one fourth of the whole.

I may here remark that the editor is quite correct in assuming that our common white butterfly (*Pieris rapæ*) owes its appearance in North America to the agency of man, it having been introduced into that continent in 1860, since which date it has multiplied and extended its area of distribution to a wonderful degree.* It may interest readers to know that the following species of British butterflies also occur in North America, namely, *Papilio machaon*, *Papilio sinon*, (*P. podalirius*, now extinct in England), *Pieris napi*, *Vanessa antiopa*, *Pyrameis atlanta*, and *Pyrameis cardui*. On the other hand, the following two species of North American Rhopalocera have occurred as occasional visitors in the British Isles, namely, the great *Danais*

* See S. H. Scudder's "Introduction and spread of *Pieris rapæ* in North America, 1860-86," with a large map, 4to., Boston, 1887.

archippus and *Pyrameis huntera*, the latter having been dubbed the "scarce painted lady" by English authors.

W. HARCOURT BATH.

P.S.—I was very interested in the second part of the editor's article, entitled "Notes on the Butterflies of Eastern North America," but he is in error respecting the White Admiral (*Limenitis sibylla*) which does not occur at all in the New World. He must undoubtedly have mistaken it for an allied species belonging to the same genus, of which there are seven found in North America. The species of *Gonepteryx* seen was either *G. mærula* or *G. clorinde*.

W. H. B.

I am deeply indebted to Mr. Bath for the trouble he has taken in endeavouring to correct my observations, but I consider that probability is as much in favour of one theory as the other, and personally I think it immaterial which view is held, as I am of opinion that the New World was formerly connected, both with Europe and Asia, and that the fauna and flora are therefore similar within the same zones of temperature throughout the palaearctic regions of the northern hemisphere. The connection between Western Arctic America and Eastern Asia, by means of the Behring Straits, and the remarkable chain known as the Alevant Islands, appears to be indisputable; and I think there are strong arguments in favour of a communication also with Northern Europe, not (as Mr. Bath wishes me to suggest) with Southern Europe, by means of "an 'Atlantis' three thousand miles in length," and anent which I may merely remark that the nearest points on the coasts of Newfoundland and Ireland are but little more than half that distance apart; it is in this direction that I would locate my "Atlantis," and find its probable remains in Ireland, the Shetland and Faroe Islands, Iceland, Newfoundland, and possibly Greenland—of course assuming that this "Atlantis" existed at a time when the northern Polar regions possessed a very much warmer climate than now, and that such a difference of climate once prevailed, is now very generally believed; this theory having also been strongly confirmed since we obtained a more enlightened view of the migrations of birds and many kindred matters.

That the south-eastern portion of England and the north eastern portion of France were formerly the estuary of a great river is now a recognised fact among geologists, and speaking of this, Sir Charles Lyell ("Elements of Geology," page 349), says: "If it be asked where the continent was placed from the ruins of which the Wealden strata were derived, and by the drainage of which a great river was fed, we are half tempted to speculate on the former existence of the Atlantis of Plato.

The story of the submergence of an ancient continent, however fabulous in history, must have been true again and again as a geological event." Respecting the same theory, Sir Andrew Ramsay, says : " I do not say that this immense river was formed or supplied by the drainage of what we now call Great Britain, I do not indeed know where this continent lay, but I do know that England formed a part of it, and that in size it must have been larger than Europe, and was probably as large as Asia, or the great continent of America (" Physical Geology and Geography of Great Britain "). The whole subject forms an inexhaustible field for study and speculation.

With regard to the mention in the *post script* of my error respecting the White Admiral (*Limenitis sibylla*), I may say that I did not obtain specimens myself but merely saw some in an extensive provincial collection, labeled *L. sibylla*, and I did not notice the mistake, because it did not occur to me that there might be one.

THE EDITOR.

NOTES AND OBSERVATIONS FROM ROYSTON.

"In days of yore, ere England's woes began" there were many more birds in this locality than at the present time. In those days the Hen-harrier coursed over the fens below this town, and the Great Bustard was a denizen of the heath lands above. Alas! they are no more, the Harriers have long since disappeared, and it is about ninety years since the last Great Bustard was seen upon our heath. These are not the only birds we have lost, for when I was a boy the beautiful Goldfinches used to build their nests within ten yards of my bedroom window, but as the gardener and farmer have rooted up all the thistles—I do not think I must say all—they find their food supply cut off, so have moved off to more weedy ground. The Wheatear, too, that was so common on our heath forty years ago, when there were plenty of holes left in the turf by the stonediggers, for them to nest in, has now gone. The Great Plover which used to breed here in considerable numbers, are birds of the past ; also the Dotterel which paid us a visit in great numbers in the spring and autumn, now only just look at their old quarters, and that but at very wide intervals.

In my calendar the 15th of April is Swallow Day, for it is the day of all days upon which they arrive, and the 18th of October is Royston-Crow Day. This year the former were

rather late in arriving, and early in departing; the Royston or Hooded Crow arrived to the day. I believe I said in my former note: "these birds were at one time very common here, but for the past few years they appear to have abandoned their visits," I intended to have said: they are not so numerous as formerly. Some years ago when sheep were not of so much value as they are now, and many thousands of acres of land were open field, the carcasses of the sheep that died were left to be devoured by any birds or beasts having a taste for such food, so the Royston Crows which are particularly fond of it would soon make clean bones of a dead animal.

October 18th. Although we are about thirty miles from the sea—nearest point—in a bee line, a Puffin, a bird of the season, was brought to me alive, to-day, having been picked up about six miles south of this place, and quite out of the way of all telegraph wires, which cause the death and capture of so many birds. I have seen specimens of the Grey Plover, Ringed Plover, Knot, Spotted Rail, Coot, Moor Hen, Snipe, Jack Snipe, Woodcock, Swift, and all our local birds which have been either killed or disabled by coming in contact with the wires in this locality. On October 23rd, I was shown some young White Owls which had only been hatched a few days, I have never known them so late in the season. Wood Pigeons are late breeders, I once shot a pair of young ones, fresh from the nest, in the middle of December.

October 28th. The Fieldfares have just arrived. If I recollect correctly it was about ten years ago, when the weather suddenly became very severe, killing these birds by hundreds, the ground in some places being literally strewn with their dead bodies.

October 29th. A Short-eared Owl—commonly called the Woodcock Owl—was brought in alive. This is the first I have seen.

November 6th. A flock of Wild Geese passed over the town, going west, also flocks of Wild Ducks have passed over. I fail to understand why they came across this part of the country, as it is many years since any number have been seen.

November 8th. A litter of nine young rats were brought in this morning. This family consists of six males and three females. How is it that the rat and the mole always provide such a large proportion of male offspring? I believe the average is always two to one. I have often wondered what becomes of the surplus gentlemen rats and moles. It is true the rats may emigrate, by going on board our ships, but I have never heard of a mole ever attempting a sea voyage.

November 9th. The Mountain Finches (*Fringilla montifringilla*) have arrived. These birds scarcely ever make their appearance with us so early, unless the weather is very severe.

November 13th. Very mild ; 58° in the shade, and butterflies out. Some weeks back I met with a beautiful specimen of the Large Egger Moth, also a caterpillar of the Great Goat Moth, both of which are rare here.

The fossiliferous remains of extinct animals which I mentioned in my previous notes, belong in all probability to the mammoth, mastodon, elk, ox, and some others. The antlers and the horn cores are of huge proportion. I will not venture to give an opinion as to the time they have been buried thirty feet below the surface, but I have no doubt they were deposited during the glacial, or ice age. I believe some remains somewhat similar have been found in the cement workings in Bedfordshire. It may not be generally known that the manufacture of very good cement is quite a new industry in this locality.

RAMBLER.



THE PRACTICAL NATURALIST.

THE CONCHOLOGICAL COLLECTION.

COLLECTING, PRESERVING, AND ARRANGING LAND AND FRESH-WATER SHELLS.

By H. DURRANT.

Old collectors will find nothing here to interest them, let them pass on and read the advertisement sheet ; young collectors will be more disposed to stop and listen, and indeed it is for these I write. On first commencing to make a collection of natural objects, the tyro is generally quite at sea and more especially so in the preservation and arrangement of his treasures. If they are objects of a perishable nature his time will be lost in the collecting thereof, and assuredly his temper will not be very much improved. Shells however are so easily preserved that the subject scarcely requires an article all to itself, but still, as the Editor wishes to make this department of the NATURALISTS' JOURNAL as complete and as successful as possible, I bow to the chair and submit to his injunctions to scribble these few lines.

The first thing we look to, then, is our apparatus, and of this you can have so much and of so wondrous construction, withal, as to fairly require the services of a handcart, or you may walk out by the side of a common or garden walking stick, with your apparatus all stowed away in your coat tail pocket.

The principal requirements of the shell collector are a net and boxes. The former will be used for collecting such species as inhabit water and the latter will hold them when obtained. The net should be made so as to fasten to a walking stick by a screw, socket, or some such other arrangement favourable to the collector. Sometimes a walking stick is not sufficiently long enough ; in this case a jointed bamboo rod will be found very handy. Bamboo rods are cheap, and very light, and admirably adapted to an assiduous collector's wants. In place of the above net, however, he will find that a strainer made of a zinc or copper hoop with a bottom of fine wire gauze is much more recommendatory in its action. A canvas net gets wet and takes a long time to dry, and unless one has an indiarubber bag to put it in, it is apt to become uncomfortable while in one's possession. However the collector must suit himself. I, myself, have had in use for some few years a cheap coffee strainer and am quite attached to it—literally by a piece of string and morally by the good deeds it has performed—but we shall part company soon, for the bottom is wearing out.

(*To be continued.*)

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*)

NOTES ON THE CICINDELIDÆ.

The *Cicindelidæ*, or “tiger beetles” as they are popularly called, from their predaceous habits as well as by the spots and stripes with which they are ornamented, are rather a numerous family, several genera and several hundred species have been described from various parts of the world, the genus *Cicindela* alone containing over four hundred species, this is the only genus represented in Britain, of which only five species occur. The commonest species in this country is *Cicindela campestris*, which is very generally distributed, and often abundant throughout the kingdom, in sandy places, on commons, &c. ; it is to be found throughout the spring and early summer, and, like the rest of its genus, is a very active insect and quickly takes to flight unless approached cautiously, they are very fond of running on pathways in the bright sunshine. A black variety of this species (var. *funebris*) occurs in the Clyde district of Scotland, it is, however, very rare. The other species are very local ; *C. germanica* occurring only at Black Gang Chine in the Isle of Wight ; *C. sylvatica* is another local insect, although generally common where it occurs, the principal localities for

this species are Woking, Essex, Bournemouth, Aldershot, &c. *C. hybrida* occurs on the Wallasey and Crosby sandhills, Cheshire and Lancashire. The last species *C. maritima*, which is by some authors considered a variety of *C. hybrida*, occurs on the sandy coasts of Devonshire, Dorset, Hants, South Wales and Burnham, Somerset, in this latter locality it is very abundant. It is somewhat surprising this genus is so poorly represented in Britain, as a number of species occur on the Continent.

A. FORD.

GEOLOGY AND GEOGRAPHY.

On Monday, November 7th, Mr. W. B. Baskerville delivered a lecture at the Lambeth Field Club on "Geology and Geography." The lecturer said he did not intend to give a whole account of the two sciences which his title held forth, but to put before his audience an outline, as an encouragement for them to take up the study, although the would-be student of Geology must of necessity know a little Geography. Geology is a science which deals with the various rocks, both as regards their strata and their position. The earliest researches of Geology have brought to light the important fact that the rocks composing the exterior of the earth are of different ages, each age of the world being represented by its own series of rocks, but what lends such interest and importance to Geology is, that the history of past ages of the world is imprinted on the rocks themselves, these imprints consist principally of the remains of animals and plants which lived upon the earth while the rocks were forming, and were thus enclosed in them and became converted into stone which causes them to be permanently preserved. The exterior of the earth at the present time represents a solid structure to which the general term "rock" is given. The lecturer then referred to the ravages the sea makes into the land, which is one of the means by which the crust of the earth is materially changed. He next very fully discussed the various stratas and took as a good example the Geology of England, during which he took his audience for an imaginary trip on the Midland Railway, which has to go over a great number of various formations in its journey northward, to enable it to visit the important towns on its line, and so has to contend with a great many disadvantages. The lecturer then explained how the human race was affected by the various stratas upon which they had to dwell, and on concluding, a vote of thanks was duly accorded and the pleasant meeting brought to a close.

CURIOS NESTING PLACES.

Since last writing on the above, the following (which recently appeared in the "Shooting Times") has come under my notice:—"a foreman in Wolverton Works, while engaged shunting, observed a wagtail fly from under a truck, a search

was made which revealed a nest located between the axle box and the axle guard, the nest contained two eggs, one having been recently laid." A short time ago a spotted crake (*Gallinula pusilla*) flew against the telegraph wires here and fell dead, this is a species we seldom see here.

Hornchurch.

A. ROWE.

THE COLLECTING OF BIRDS' EGGS : CLUTCHES OR SINGLES ?

In reply to W. N. Rushen's query in the November NATURALISTS' JOURNAL, I must deny the only advantage of clutch collecting is, "the very slight one of seeing at a glance the number of eggs laid." A very strong argument in favour of clutch collecting is to be found in the fact that very few birds always lay exactly similar eggs, and indeed every oölogist knows that the eggs of any one species vary in size and colouring to an almost unlimited extent, not only in different clutches but often in the same clutch. Thus, the tree-sparrow and many other species almost invariably lay one light, or sparingly marked egg in each clutch ; while other species, as some of the hawks, often lay in each clutch an egg which is smaller than all the others and with the markings collected around the small end instead of the large ; then again those birds that lay "spotted" eggs very frequently produce, in the same clutch, eggs that vary from one that is marked with small and regular spots to one that is beautifully marked with bold blotches and splashes. These and other interesting peculiarities can only be preserved by taking the entire clutch of eggs ; and I think that if the collector wishes to profit much by his pursuit, he will be of necessity obliged to become a "clutch collector," although I certainly do not seek to uphold an unlimited or indiscriminate collecting in any way ; and I think that one or two clutches would be quite sufficient for any collection. Perhaps it is not very generally known that if a nest of fresh eggs is taken, the bird will commence building again almost immediately ; while if only one or two of the eggs are taken the owner will not uncommonly desert the nest and commence building again—sometimes in the very next bush. I think it would be interesting to know the opinion of all your oölogical readers as to which system they favour.

OÖLOGIST.

KILLING REPTILES FOR PRESERVATION.

Perhaps the easiest way is to immerse them head-first in spirits, with something heavy to keep them under the surface, this is merciful ; the cyanide bottle is perhaps the most merciful —put them in at sunset and leave them in all night. But why kill frogs, one of the most useful creatures in creation ? I shall be pleased to give any other information.

PERPETUOUS NATURE.

The simplest and most efficient way of killing reptiles is to chloroform them, I have found this to be much better in effect than cyanide ; an ordinary chloroform bottle can be used.

E. SUMNER.

NOTES AND NEWS.

MR. H. DURRANT writes us that he has been inundated with letters in reply to his advertisement, offering specimens of *L. stagnalis* var. *elegantula*, in exchange, and asks us to state, for the benefit of those he has not answered, that fresh supplies of *Elegantula* shall be obtained, when he will forward. We are glad to hear the NATURALISTS' JOURNAL is such a good medium among one section of our readers and trust it is so with all.

THE BIRDS OF LONDON.—More than 20 subscribers are still needed before this work is sent to press. The price to subscribers will be 1s. 6d. (including postage), and as soon as 50 names have been received it will be sent to press. For further particulars see No. 4, page 46.

FOR SALE AND WANTED.

Charges for advertisements :—first twenty words, 5d., and every additional four words, 1d. When a private number is used, 2d. must be added for forwarding answers, the address then not being charged for.

SHELLS.—1,100 species foreign shells. 25 species, 40 examples Indian land and freshwater, many rare, 5/6. Lists.—Linter, Arragon Close, Twickenham.

STUFFED BIRD.—For sale, a well mounted saw-whet owl, price 7/6, post free ; approval.—A. 4., Office of the NATURALISTS' JOURNAL.

NESTS.—Trapdoor spider, 3/9, tarantula spider, 1/6. Eggs, logger-headed turtle, 1 2. Saw-fishes' saws, 1 6, 2 -. Horned toads, stuffed, 5/6. Humming birds' skins, 7d. ; stuffed, 1 3. All choice and post free.—Charles Jefferys, Naturalist, Tenby.

NATURAL HISTORY HANDBOOKS.—Comprising, Collecting and Preserving Birds' Eggs and Nests, Dragonflies, Land and Freshwater Shells, Flowering Plants and Ferns, Freshwater Algae, &c., by popular writers ; price 2d. each, postage ½d. extra.—Office of the NATURALISTS' JOURNAL, 369, Euston Road, N.W.

BOOKS.—“An Illustrated Handbook of British Dragonflies,” by W. Harcourt Bath, well illustrated, price, 2s. 7½d., post free. “The Naturalists' Calendar and Weather Guide,” (same author) post free, 6½d. “Skinning and Preserving Birds,” full directions, post free, 3½d.—Office of the NATURALISTS' JOURNAL, 369, Euston Road, London.

LABEL LISTS.—For birds' eggs, butterflies, and land and freshwater shells, price, 2d. each, post free. Label list of marine shells, in two parts, price, $5\frac{1}{2}$ d. post free. Ditto Macro-Lepidoptera, 3d. post free. Data blanks, $4\frac{1}{2}$ d. per 100, post free.—Office of the NATURALISTS' JOURNAL, 369, Euston Road, London.

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Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

WANTED.—Offers in British birds' eggs and skins, must be choice; for North American ditto.—Charles Jefferys, Tenby.

DUPLICATES.—*Ulmata, Suspecta, Thalassina, Blomeri, Vesperaria, Impura, Comma, Rurea, Strigilis* var. *Aethiops, Brunnea, Gemina, Olaracea, Segetum, Exclamationis, Trapezina* vars. *Xanthographa, Festiva, N. Rubi, Comes, C. Nigrum, Basilinea, Lonicerae, Pisi, Fasciuncula, Plumbaria, Pusaria, Didymata, Rubiginata, Pennaria, Strigillaria*; also birds' eggs. Desiderata, Lepidoptera and birds' eggs.—E. G. Potter, 19, Price Street, York.

DUPLICATES.—*Helix hortensis, V. olivacea, H. lapicida, H. pyrenaica, H. cantiana, Z. excavatus, A. nitidulus, Glaber, A. cygnea, L. peregra, V. acuminata, D. polymorpha*. Wanted: *H. lamellata, H. concinna*, vars. of *H. aspersa* and *arbustorum*, *H. pomatia*.—Richard Hollings, 84, New Line, Greengates, Apperley Bridge, Leeds.

DUPLICATES.—A large number of correctly named British Coleoptera, including many rare and local; also a few Lepidoptera. Desiderata: local British Coleoptera, or foreign and exotic species, and Lepidoptera.—A. Ford, Claremont House, Tower Road, West, St. Leonards-on-Sea.

DUPLICATES.—*H. Jenkinsi, L. glabra, C. rolphii, P. marginata*, &c. Wanted: *Z. glabra, Z. fulvus, H. fusca*, and many others.—A. S. Poore, Seivour Cottage, Abbey Road, Belvedere, Kent.

NATURALISTS' WORLD, 1885, 1886, and 1887 (one copy missing in the two former volumes), also two odd numbers. Will exchange for rare birds' eggs.—B. R. Harrison, Denmark House, Highgate, London, N.

FORAMINIFEROUS AND DIATOMACEOUS earths and sands, viz.: cementstein, red crag, coral crag, sand from hurdle beds, Barton clay, sand from Jersey, Weymouth, Barmouth, Ceylon, &c. Whole and portion wings exotic Lepidoptera, &c., also *D. polymorpha*, *H. cantiana*, and var. *Pyrimidalis*, *H. virgata*, *H. nemoralis*, and vars. *Castanea*, *Libellula*, *Rubella*, *Albida*,

H. aspersa, *Pl. corneus*, *Hy. ulvae*, *N. fluviatilis*, *T. testudinalis*, *L. obtusata*, *D. entalis*, &c., a few *Pleurostoma rufa*, *Lacuna crassia*, *C. reticulatum*, *A. tornatilis*, &c. Wanted: other good shells, living slugs of many species for dissection, fossils or minerals.—H. Durrant, 4, Boulton Road, West Bromwich.

WHAT OFFERS for a small collection of North American butterflies, including some beautiful swallowtails, Danaidæ, &c. Also a grand collection of North American dragonflies; large collection Japanese dragonflies; small collection South African dragonflies; several handsome silkworm moths; British dragonflies and other insects.—W. Harcourt Bath, 195, Ladywood Road, Birmingham.

FOR DISPOSAL a small cabinet containing six drawers, not glazed, suitable for birds' eggs, shells, or fossils. Also many new and second-hand Natural History books.—W. Harcourt Bath, 195, Ladywood Road, Birmingham.

WANTED.—Collection of foreign stamps. Offered in exchange, Natural History specimens.—W. K. Mann, Wellington Terrace, Clifton, Bristol.

WANTED.—Stamp collections and Natural History books. Can offer shells and Lepidoptera.—Miss M. E. Pepperell, 5, Park Street, Bristol.

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A. F., ST. LEONARDS-ON-SEA.—We are pleased to acknowledge receipt of several subscriptions as a result of your kind exertions on our behalf.

E. G. P., YORK.—Your exchange, with a number of others, had to be kept back last month owing to want of space.

F. G. B., CROYDON.—We communicated with Mr. Ladd as requested, and shall be glad to hear result.

F. T. Y., BRAINTREE.—Glad to hear you like the NATURALISTS' JOURNAL; we hope to effect an increase of four pages before long.

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TO OUR READERS.

ITH the commencement of the second year of the existence of this journal, we wish to thank all those among our readers whose kind assistance has enabled us to bring the first year of our undertaking to a successful close.

We also wish to ask all our readers to assist us during the present year in our endeavours to make this magazine a real success—both literary and financial.

Already the NATURALISTS' JOURNAL has begun to establish itself as a popular medium among a large class of workers, and at the close of the second year we should like to see it firmly established as a periodical ; but a great deal still remains to be done to attain this object, and here it is that every reader can assist us by making the NATURALISTS' JOURNAL more widely known.

In the present volume a number of first-rate articles, by well-known and experienced writers, upon a great variety of subjects, will appear, while we shall also endeavour to introduce as many attractive features as possible, together with good illustrations.

As mentioned last month the magazine will, commencing with the issue of January next, be permanently enlarged.

THE EDITOR.

A GLIMPSE AT THE CABBAGE AND SOME CABBAGE EATERS.*

By H. DURRANT.

Good, sweet Euripides!
Grant me but this. I'll ask no more, but go—
Some cabbage leaves—

The Acharnians, Aristophanes.

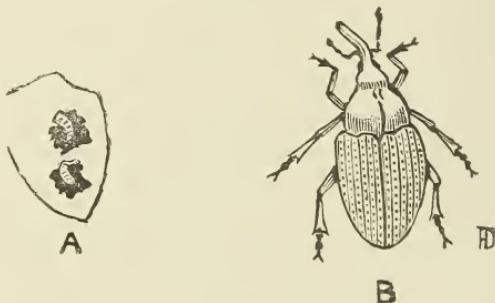
Good worts : good cabbage.
Merry Wives of Windsor, Act I., Scene I.

Part I. THE CABBAGE AND SOME VARIETIES.

Gentlemen,

To night we are to have a glimpse at a subject which is not dry by any means *au contraire*, it is quite succulent ! Little praise has been accorded the cabbage goodness knows, and a "wee bit" eulogy I feel sure will not be out of place. The tenderhearted article of food has been and *is* the butt of every comic writer and artist. It has braved the ordeal of the stage too, we all remember the mirth that attended the low comedian's extraction of it from the basket and what a monstrous Black Jack it was.

Coming lower down the precipitous scale of moral dignity we find that it (in name, anyway) is applied to the pieces of cloth reserved as perquisites by the wretched tailors who make up gentlemen's slop suits from their own materials, and besides this, designates the action, as thus: "your tailor instead of shreds, *cabbages* whole yards of cloth."†



Curculio pleurostigma.

A. Larvæ *in situ.* B. C. pleurostigma (magn.).

Gentlemen, have you ever for one moment considered (away from your dinner table) the urgent claims the cabbage has on us as one of the most valuable and useful vegetables we have? Very rarely I think. Have you ever given a thought to its

* Read before the North Kent Entomological and Natural History Society on March 1st, 1893.

† John Bull, *Arbuthnot.*

life-history while revelling in the luscious close folded "sprout" or the crisp and snowy broccoli? What! you say, I am digressing from my subject and you thought my text was the cabbage. Nothing of the sort, I have not digressed. You see, the poor cabbage does not receive its just meed of praise; the broccoli, the cauliflower, or the sprout steps in and claims more than a fair share, when we reflect that to the cabbage they owe their very existence. It is a satisfaction to know, however, that though *we* may not appreciate it to its full extent the ancients did, and that as you shall see with much vigour. And now let us go into things a little more specifically, and then afterwards you will be able to draw your own conclusions or *cabbage* them. (N.B. This is not a joke, I never commit myself thus before societies.) I shall want you to imagine, then, something very different from the cabbage in its garden form, viz.: the wild cabbage, *Brassica oleracea*, which I will describe to you.

B. oleracea belongs to the order Cruciferæ, whose members all possess as the distinguishing feature the four cruciate petals and the tetrodynamous stamens.* The root is fleshy and cylindrical; the sepals erect; the petals obovate; and the silique or pod lineor and angular with very little style. The seeds are globose, in one row. It is a biennial, glaucous leaved, woody stemmed plant, and is too acrid to make it an acceptable dish, except when young. The radical leaves are stalked and obovate with waved or sinuated margins, occasionally sublyrate. The upper leaves are sessile, often semi-amplexicaul. Flowers in lax racemes, each individual one about an inch across and of a light sulphur yellow colour. The pods are about three inches long, slightly compressed, the beak abruptly conical and not containing a seed.

Such is a short description of the appearance of the wild *Brassica oleracea*—the common cabbage of the sea shore. It is abundant on the coasts of Kent, the Isle of Wight, Cornwall, Wales, and Yorkshire. On the Continent it is met with upon the cliffs of many parts of Europe, and Lib'horp, a famous traveller of the last century, stated that he found it abundantly at Mt. Atlas, in the southern part of Turkey, but as this has not been confirmed, I believe, by any other botanist it must not be taken for granted. There are few plants that can boast the progenitorship of a more extensive series of varieties and sub-varieties than the one under consideration, if we pay at the same time respectful attention to their evident usefulness; and the progression away from the type is most marked. What can bring this more forcibly to the mind than a simple comparision between the yellow flowered plant of the sea shore and the flowerless, compact red cabbage of the gardens? Though the

* Four long and two short.

differences are markedly brought before the eye at a single glance, yet, contrary to their suggestion the plants are one and the same. Often in old deserted gardens will be seen various varieties of the cabbage (including the red) in stages of reversion to type, some having perhaps reached there. This is nothing uncommon. So soon as art leaves the scene and cultivation is denied them they immediately commence to revert to the form of their ancestors, and if left undisturbed, will, in a very short time accomplish their degeneracy. At the same time it is difficult to conceive the primary means that enervated the wild variety into the commencement of that series of changes which has resulted at the present day in so numerous an assembly of cabbages, borecole, savoys, cauliflowers, and broccolis—all most useful and delicately flavoured vegetables. It is difficult to understand, I say, how such have been evolved from the woody stemmed, glaucous herb of the sea shore.

There are three plants very much like the wild form of *B. oleracea* and which in all probability were derived from it, I allude to *B. campestris*, including *B. napra* (the turnip) and *B. rapa* (rape or coleseed). There are many indications that favour the theory of *B. oleracea* being its initative, and it is singular to note that nowhere are the above forms (which may be considered as agrarian) truly wild, but closely accompany cultivation in its travels through Asia, Europe, and America.

From the remotest times the cabbage has been cultivated as an article of food. The Greeks were well acquainted with it, and added to their mythology yet another myth to account for its appearance. Zeus, say their poets, was called upon to give judgement between the two conflicting pieces (chunks, as our American friends would say) of supernatural wisdom. This caused him to perspire profusely, whether from the enormity of the task or natural causes, little matters ; at any rate we are told that the cabbage sprang from the moisture. I daresay there is some little degree of meaning hidden in the story, perhaps having reference to the labour required to make the plant fit for its mission as a wholesome vegetable.

The Romans, it seems, were also very partial to the cabbage and ate it either raw or with vinegar, and Pliny relates that in Italy such enormous cabbages grew that the table of a poor man could scarcely support one. The same author records several kinds, among them one which, he says, was frequently placed in cases recently containing oil, securely sealed and kept for a length of time, or used as a vegetable diet on long voyages. The young and crisp sprouts were in particular esteemed a great dainty, although it is recorded that Apicius and Drusus rejected them. But these two were epicures of the deepest dye, and had they lived in our day would probably have rejoiced their palate over the sprightly Gorgonzola, the high toned hare,

and the green, hung mutton, washing them down with acrid Rhine wine or bilious Absinthe. Drusus, however, according to Pliny, was reprimanded by his father for his fastidious taste, and deserved it too. But let us leave the ancients for a while and have a glimpse at the plant in our own country.

(*To be continued.*)

BIRD LIFE IN WANSTEAD PARK.

THOSE dwellers in the East End of London who take an interest in ornithology will find plenty to instruct them in Wanstead Park, which Park was taken over for the public by the Corporation of London some few years back, and is situated close to the busy manufacturing town of Stratford.

About the most interesting feature here to lovers of bird life is the heronry, which is situated on an island in one of the lakes and usually contains, I believe, about thirty nests. During the breeding season herons may often be seen flying to and from the Park, at times uttering their harsh cries of "frank" "frank." Their powerful wings enable them to rise to a great height and when watching them I have often thought how they must have put the powers of the falcon to the test in the old hawking days, when the heron was considered royal game. Specimens that I have handled averaged in measurement, from point of beak to extremity of tail, three feet, and about four and a half feet from tip of one wing to the other, whilst the entire weight is only a few pounds, clearly showing rare powers of flight. On the waters of the Park coots and moorhens may frequently be seen and an occasional little grebe or dabchick, and wild ducks. At rare intervals the great crested grebe and pochard have been seen.

During springtime I have frequently seen the common sand-piper or summer snipe running about the edges of the lakes, and in winter both the common and jack snipe. The peewit or lapwing may be sometimes seen on the adjoining fields, and in hard weather large flocks have been known to pass over. During May that singular looking bird of the night, the nightjar, arrives and may be seen at dusk hawking for moths and other insects in the glades of the Park. These birds when resting during the day sit lengthways on their perch with the head low down : I have never seen them here after September, for about this time they appear to leave the district.

The little blue tit is very common here and on summer evenings the sweet sounds of the nightingale's note may often be heard. The sparrow hawk is rarely seen, but the kestrel

hawk pretty frequently, sometimes suspended, as it were, in the air, its eyes scanning the ground for its luckless prey. The great and lesser spotted woodpeckers are rarely to be found, but the green woodpecker is sometimes met with, and directly it observes you watching it, off it goes with a heavy dipping flight to another part of the Park. It ascends the tree trunks with a jerky motion, assisted by its stiff tail feathers, and once I saw a bird of this species busy feeding on the ground in the neighbourhood of an ant-hill. The cuckoo is more frequently heard than seen here during the summer months, and large quantities of wood pigeon inhabit certain parts of the Park.

The wheatear is about the earliest of the visitors to arrive, followed later on by the whinchat. The sprightly little stonechat is here sparingly all the year round. The red-backed shrike or, as he is more commonly known, the butcher bird, arrives in May departing in August.

In winter fieldfares and redwings are about in flocks and blackbirds and thrushes always abundant. Flocks of cawing rooks pass overhead and immense flocks of them and starlings repair to roost in the trees at dusk. Small numbers of hawfinches visit the Park but are not easily observable being of such shy and retiring habits. Chaffinches, greenfinches, and linnets are very common here, but the goldfinch rare, as is also the bullfinch.

Only once on the water have I seen that handsome but much persecuted bird the kingfisher : it was a beautiful day and the bright colours of the bird glittered in the sunshine as it darted to and fro, occasionally it hovered over the surface of the water and then darted down with astonishing swiftness on some unlucky fish and was off. Many other species are met with and being as it is so near London, this Park may be said to be rich in bird life.

A. F. GATES.

THE PRACTICAL NATURALIST.

PRACTICAL HINTS ON COLLECTING DIPTERA.

By A. FORD.

No order of insects has been more neglected by British Entomologists than the Diptera, although this is, perhaps, the most interesting and instructive of all the groups and the student of this group will have more opportunities of distinguishing himself by adding new species to the British fauna or even to

Science than he would by working any other order. About 3550 species are recorded in the British list, several hundred of which are placed in the list as doubtful and require verification, as in some instances the types have been lost.

The apparatus of the Dipterist is very simple and inexpensive, the chief articles required being a net, the same as is used by Lepidopterists ; a cyanide bottle for killing—some collectors use ammonia which is equally effective ; a few small setting boards, which can be purchased from any dealer in Entomological apparatus for a few pence each, the most useful sizes being one inch and one and a half inches ; also a supply of Entomological pins, and lastly a few store boxes or a cabinet, according to the fancy or "cash" of the collector. Some Dipterists mount their specimens on cards in the same way as Coleoptera are mounted, by using the transparent gum fragacanth but there is a great disadvantage in this method, as many species can only be determined by examining the underside of the head and thorax and this would necessitate their removal from the cards, which in the case of delicately formed species would probably spoil them. Many Continental collectors do not set their Diptera at all but simply pin them and leave them unset.

Diptera may be found almost everywhere ; many species are attracted by various flowers, especially hawthorn blossom, thistles and various umbelliferous plants which are so common in lanes, woods, &c., many of these are large and conspicuous species of *Syrphidae*, *Conopidae*, *Tachinidae*, *Muscidae*, &c. Several species of *Muscidae*, &c. are attracted by decaying vegetable matter, among these are many species of the common "blue-bottle" flies. Everyone is well acquainted with the *Tipulidae*, *Limnophilinae*, and allied families which are popularly known as "daddy-long-legs," although it is not so generally known that there are over 200 species of these occurring in Britain ; they are most frequently found in damp places in woods, on the banks of streams, &c. Many species of Diptera may be obtained by sweeping the long grass in meadows and on sunny banks, &c. In fact there are few localities where an enthusiastic student may not be able to add to his collection and he may be certain to obtain several "rarities" his first season, and possibly an addition to the British fauna. I shall be pleased to give any information in my power to students of this group (through the Editor of this journal), or refer them to some of the leading authorities on the subject.



Specimen copies for distribution will be sent post free to any reader on application.

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents*)

NATURAL HISTORY IN BOARD SCHOOLS.*

Perhaps you will allow me through the medium of your columns to make known a practical want for which the Naturalists' trade apparently makes little or no provision in this country. I have an official connection with a large number of schools, and my duties lead me to encourage the keeping and examination of natural objects of a common kind. But if I ask naturalists to supply me, for example, with stuffed specimens of the *common house sparrow*, cock and hen, there is no such thing to be got, whereas Birds of Paradise or any foreign bird can be had for money. I have frequently tried to get preserved specimens of the *common English honey-bee*—worker, drone, and queen—but at last I gave up in despair, when every naturalist offered me any number of exotic species, instead of the kind I could use in an elementary school. In Germany you would find that a whole trade exists by the accurate study of teachers' wants in this respect, and it seems to me that if some "practical" naturalists were to lay themselves out to know the conditions of the schoolroom and class teaching, and would procure specimens of common birds and insects, and arrange them in such a way that they might be passed from hand to hand without injury to the specimens, they might increase the demand for which there is at present no adequate supply.

M. J. LYSCHINSKA.

*Superintendent of Kindergarten Method
under the London School Board.*

ZONARIA AT WALLASEY.

On Good Friday I went to the old collecting ground to see if I could find a few *Zonaria*. I had not been there for a few years, they having got so scarce, but at the request of a young man who wanted to go and see the ground and how to find them, I consented to go with him. It was a grand day for the purpose and I soon found one specimen, which gave hopes for more and in this we were not disappointed. It required patience and strict searching as my young friend found before he had any success. I picked up twenty-six males and four females, which latter have laid me a number of eggs, and we saw and left many more females. We left the sandhills well pleased with our outing and success.

243, Hailiwell Road, Bolton.

JAMES GRIME.

ARGYNNIS EUPHROSYNE.

On Wednesday afternoon, April 26th, I sallied forth to a copse two miles from here on a larva-hunting expedition. I

* See NOTES AND NEWS.

had not been there twenty minutes before something reddish caught my eye. Excitedly I struck at it, and lo ! fluttering in the net was a splendid specimen of *cuphosine*. I caught several others (and, while in pursuit of one, also *Corema unicoloria*) all in the same place and pink of condition. Their food plant, the dog-violet, was abundant. I think my capture must be the earliest on record.

Lincoln.

E. PORTER.

NOTES AND NEWS.

NATURAL HISTORY IN BOARD SCHOOLS.—Referring to the letter on this subject which is printed elsewhere in our columns, we feel sure that Mr. Lyschinska's complaint is a just one, and one which should appeal strongly to every naturalist. If any of our advertisers would undertake to supply the kind of specimens referred to we shall be very pleased to record the fact in these pages ; or perhaps some of our numerous and obliging readers would prepare a few specimens—the cost would be little if anything and the cause is surely worthy of it !

MR. H. MACKAY, of Dumfries, sends us a sketch of a *four-legged chicken*, which was sent to him recently from Kirkpatrick, Durham, and which lived only eight days. The sketch shows the fore-part of the chicken of the normal form, while there are two additional well formed legs and feet behind.

THE BADGER IN LEICESTERSHIRE.—A badger has been caught at Staunton Harold Park, Leicestershire, this being the fourth locality in the county in which it has occurred during the last twelve months. It is a pity that the remnant of this already rare animal cannot be allowed to remain unmolested.

A KITE IN CORNWALL.—A correspondent of the "Feathered World" records the capture of a kite in the parish of Camborne, Cornwall.

MONDAY, June 26th, was eventful as the one hundredth anniversary of the death of Gilbert White, the father of modern British naturalists. He and his work are far too well known to need a lengthy eulogy here, for who has not read the "Natural History of Selborne," that famous English classic. Naturally the Selborne Society have celebrated the event by arranging an excursion to Selborne.

AT THE annual meeting of the Lambeth Field Club, held on June 5th, special mention of the NATURALISTS' JOURNAL, was made and the Society passed a vote of thanks on us for the manner in which we have reported their meetings, &c., during the past year.

THE BIRDS OF LONDON.—Copies of this work, bound in cloth, may now be had from the office of this journal, price $2/1\frac{1}{2}$, post free.

BOOK NOTES.

THE BIRDS OF LONDON, By H. K. SWANN.*

By this time the above work has been placed in subscribers hands, and has met, we do not doubt, with unanimous approval. So far as the nature of the thing admits it is really a pleasant reading book and not a dry-as-dust, monotonous catalogue. The introduction is specially noticeable for its simplicity of diction ; at the same time it betrays its author as an old hand in the ornithological sphere and not without an eye for the æsthetic in Nature. We are tempted to quote one little passage which struck our fancy, but the inevitable want of space forbids. However let us just mention that the nomenclature and classification followed has been that of Howard Saunders, in his "Manual of British Birds" ; that the work is printed in a neat, clear type, the interlinear spaces being well leaded. The Latin name of each bird is boldly lettered so that there is no trouble for those who have to "play the trombone" with their book before obtaining the focus, in finding what they want ; though for the matter of that there is a good cross-reference index for guidance. Our advice is, get the volume at once as the edition is rapidly disappearing and there may not be another issued.—H.D.

WE HAVE received a copy of Mr. H. T. Booth's little work on "British Birds, their Nests and Eggs, Distribution, &c." It is just the kind of handbook we should recommend for a beginner, as it contains brief descriptions of the nests and eggs of nearly all the species breeding within the British Islands, together with a slight sketch of their distribution and a summary of the Wild Birds Protection Act. It will be seen advertised elsewhere in our columns.

PERIODICALS, &c., RECEIVED.—The "Amateur Naturalist" (Organ of the Amateur Natural History Society) June number; "Science Siftings" ; the "Western Gazette," and the "Sussex and Hants Naturalist," June number ; we are informed that the latter is to be issued in a coloured wrapper in future, commencing with the July number.

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EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

WANTED.—Ova and larvae of British butterflies, sphinges and bombyces. Offered: *Rhamni*, *Edusa*, *T. rubi*, *L. aries*, *argiolus*, *Lucina*, *Adippe*, *Sylvanus*, *Tages*, *Alveolus*, *Paphia*, also larvae of *Lubricipeda* and dragonflies.—W. Harcourt Bath, 195, Ladywood Road, Birmingham.

FOR EXCHANGE.—"The Microscope," by J. Crowther. Will take any four of the following insects: puss moth, Jersey tiger, eyed hawk, privet hawk, lappet, lime hawk, marsh ringlet, or large tortoiseshell.—H. Payne, 152, Kensington Park Road, Bayswater, London, W.

DUPLICATE eggs and sets of sooty tern, sandpipers, common tern, rook, redwinged starling, cow-bird, capercaillie, Iceland gull, Leach's petrel, Brunnich's guillemot, eider duck, fieldfare, &c. Wanted: side-blown eggs with data.—F. W. Paple, 62, Waterloo Street, Bolton.

WANTED.—Many back numbers of the "Zoologist." Offered: Natural History books, specimens, &c.—Editor, Naturalists' Journal.

DUPLICATES.—Side-blown eggs of wood warbler, sedge warbler, sand martin, grey wagtail, greenfinch, canary, ring ouzel, wren, swallow, wheatear, hooded crow, white-fronted coot, linnet, &c. Desiderata: numerous.—Joe Firth, Mill Bank, Triangle, near Halifax.

TO CORRESPONDENTS.

M. G., RICHMOND.—Guinea-pigs should be given a vegetable diet; feed on barley-meal and oats with a little cabbage; green food, however, should be given sparingly. They are very susceptible of cold and should be kept warm and dry. We regret we cannot give a separate article on this subject.

MR. J. F. CORDON, 16, Ironmonger Row, Old Street, St. Luke's, E.C., will be glad to correspond with any other readers of the NATURALISTS' JOURNAL who are interested in Entomology with a view to mutual assistance and intercourse. We shall be pleased to hear from any other readers who wish a similar publicity.

H. P., BAYSWATER.—Received; the early pupating is no doubt owing to the fact that the season is a very early one.

G. W., CLAPHAM.—We mentioned the fact of mice eating eggs in the May number (p. 128). It is hard to say whether the bird mentioned was a cuckoo—an eye-witness (Dr. Jenner) has stated that he saw a young cuckoo eject three young birds within *two days* of hatching and our own experience is almost similar, but even quite recent authorities have stated that it does not take place until the cuckoo is eight or nine days old. As to the moths they may be stuffed if desired by drawing out the contents of the abdomen with a fine hook (as soon as killed) and filling the cavity with cotton.

F. P. P., CHARING CROSS.—Many thanks for your interesting account of the Lambeth Field Club's outing; it shall appear next month.

W. G. C., THETFORD.—Shall appear next month.

M. B., BELLAGIO.—Shall appear in August or September numbers.

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VOL. II, No. 14. AUGUST, 1893. ONE PENNY.

THE BIRDS OF CAMBRIDGESHIRE.

By ALBERT H. WATERS, B.A.

(*Continued from page 135*)

BEFORE continuing my list of the passerine birds I have to make an explanation regarding a statement in my account of the hawks, which statement one of the members of the Practical Naturalists' Society thinks somewhat extraordinary. Before proceeding, then, I will say a few words

MORE ABOUT THE RAPTORES.

The complete MS. of my notes on the Birds of Cambridgeshire is far too bulky for insertion in a magazine of the size of the Naturalists' Journal, unless I took up more space than the editor could possibly spare me, and continued my account through three or four volumes. I have had therefore to condense it largely and it has happened in doing so that a slip of the pen has been made, and as I did not see a proof before the article appeared in the magazine, it escaped correction and constitutes an erratum on page 110, vol. I, line 42, where "even" should be read for "especially."

As originally written the last paragraph but one on that page ran :

The commoner hawks, such as the kestrel and the sparrow hawk are not infrequent. . . . the hobby may also be sometimes seen and, what is especially noteworthy, hobbies have even been seen in winter, for I have it on the authority of a well known Newmarket naturalist that several of these beautiful little hawks were seen at Newmarket at the end of the winter of 1892.

In hurriedly abbreviating the above paragraph it happened that the word "especially" was retained and "even" deleted,

whereas my intention was just the reverse of this, and I would seem to have made the remarkable statement that an æstival bird occurs here especially in winter. Curious, however, as it may seem, and at variance with what the books say, it seems to be, nevertheless, a fact that the hobby *was* seen in this county in winter! My authority for this is the naturalist aforesaid. In a very interesting letter communicated by him to the "Newmarket Journal," of February 19th, 1892, he says, "two or more of the fine old buzzards have been seen during the last few days in the neighbourhood of Newmarket" and also, "several of the beautiful little hobby hawks have been seen at Newmarket lately."

In a letter from Mr. Wm. Howlett—the naturalist referred to above—and which communication lies before me, he says :

"The hobby was rather common in this district last year. I had three if not more sent me. I really cannot say the exact date but somewhere about March. One was picked up in a large field where coursing was going on, it had either been shot or struck with something that injured it very much. Two I had from the Soham or Wicken fen."

So there is no doubt that a small number of hobbies were to be seen in Cambridgeshire in February and March last year. At the time, as my readers may remember, the weather was very wintry and we had snow up to Easter.

It may perhaps be as well to say that with such an experienced naturalist as Mr. Howlett there can be no doubt that they *were* hobbies and not merlins ; besides he had "three or more" in his hands, so could not possibly be mistaken.

The occurrence of the hobby in the early part of the year is not unprecedented, for Mr. Montague Brown in his "Notes on the Vertebrate Animals of Leicestershire," (Zoologist, vol. X, page 166) writes of it having been seen at Rothley in March, 1880.

PASSERES, *Continued.*

I omitted to mention the golden oriole (*Oriolus galbula*), as I have not myself been fortunate enough to come across a specimen in this county, but in a letter to me dated June 6th, 1893, Mr. Wm. Howlett, of Newmarket, informs me that he had a specimen about three weeks previously. It would seem, then, that this bird of tropical plumage, so very rare in Britain, may be added to the list of the summer visitants to Cambridgeshire.

The ring ouzel (*Turdus torquatus*) flies across the county on its way to and from its northern breeding ground, but so far I have not come across its nest within the limits of this district.

Hedge accentors or "hedge warblers" (*Accentor modularis*), "hedge sparrows" in schoolboy parlance, are common in the

hawthorn bordered droves, drift ways, and country lanes, and their lively song may be heard in every part of the county where they can find sufficient shelter, for they are careful birds and like to have thorny bushes near at hand to fly to in any danger, real or apparent. They build very early in the spring and their blue eggs are among the first the boy oölogist obtains. In the winter they come into my garden and are then tolerably familiar, and thankful for scraps of food.

(*To be continued.*)

NOTES FROM ROYSTON.

PARADOXICAL as it may appear; the past month, although having been uneventful, has been most eventful, for the terrible drought has had a most serious effect on both animate and inanimate nature. Having been intimately connected with agriculture for many years I see this year what I never saw before, viz., many acres of wheat on full ear and many acres of spring corn which has not yet appeared above the ground—I should perhaps have said, many acres sown with spring corn. Moreover, curious to relate, some of the barley has turned into malt in the ground. In our gardens everything is prematurely early, and where the waterpot is not freely used the things are drying up. At the beginning of May our bees looked like throwing off early swarms, but alas! for want of moisture they have not increased in numbers, and I believe vast numbers have been killed by the birds. Up to nearly the end of May we had a great number of butterflies, but from some cause I will not attempt to explain, they have disappeared.

May 16th: spotted flycatchers and red-backed shrikes arrived. We have a rather unusual number of the former and of the latter a fair show. May 22nd: a pair of robins brought off a brood of nine young ones; this surely is beating record. May 28th: partridges beginning to hatch off, this is exceedingly early.

June 6th: a Canada goose was shot near this place, it was one of nine; I have no doubt they had strayed from some ornamental water. June 14th: I noticed to-day that the starlings are collecting in large flocks, I do not know of a single pair having a second brood. I also noticed the sparrows in large flocks, as they are seen in the autumn.

June 20th: I have now before me two cuckoo's eggs, which, I believe, were laid by the same bird, they are exceedingly alike in size, weight, and marking, one was taken from the nest of the hedge sparrow, the other from the nest of the greenfinch. The interesting feature in these eggs is, that the egg from the

nest of the hedge sparrow has a pale blue ground, whilst the other has a nearly white ground, showing that the cuckoo has the power to a certain extent of colouring its eggs at will.

June 21st : some beautiful clutches of the eggs of the tree sparrow were brought in this morning. June 22nd : sparrows engaged in catching midsummer daws (*Melolontha vulgaris*), they were very busy up to 8.30 p.m., they appear also to be fond of grasshoppers, and I am sorry to say they will kill bees. June 30th : up to the present time I have not seen a wasp, neither have I heard of a wasps' nest. The butterflies have about disappeared, and the common blue are exceedingly pale in colour.

July 1st : this morning some humble bees empaled on thorns by the red-backed shrikes—butcher birds—and also part of the skin of a field vole which was hung on a thorn were brought to me. I have often read of young birds being empaled, but I never heard of humble bees and voles being treated in the same way. I am told that very many young tame pigeons die in the nests. I fail to understand the reason, unless this dreadful drought affects them as it does nearly everything else. July 10th : the birds are still nesting. I have in the past few days met with the nests of the whinchat, tree pipit, bunting, yellow bunting, linnet, hedgesparrow, and wren. July 13th : at last we have had some rain, but too late for the corn. Hundreds of acres of barley and oats in this locality are a total failure. July 15th : the wasps are just begining to appear, although I hear in many places they are very numerous.

RAMBLER.

THE FUTURE OF SCIENCE AND ITS RELATIONS TO LIFE.

ON Monday, July 3rd, at 8 p.m., Mr. O. F. Bloch delivered before the members of the Lambeth Field Club and Scientific Society, at their rooms, St. Mary's Newington Schools, Newington Butts, S.E., an extremely interesting lecture under the above title.

The lecture commenced with allusions to the commercial spirit of the age, which at present tended to arrest its proper scientific development. There were still many important problems unsolved, one of the principle ones being the economic production of energy and its application to work. It was impossible to say from what source this energy was to be produced, but probably from the winds, the tides, or electricity. Photography was making vast strides and aerial navigation was

a rapidly growing science and a most important one. The question of communication with the planets was then dealt with. Mr. Bloch showing by means of diagrams that the chances of existence of sentient beings on Mars were extremely small, about 100,000 to 1, according to his calculations, which were based on the enormous age of our earth before the appearance of man upon it. The science of bacteriology was then taken as a type of the growth of scientific knowledge, as it was but a very recent branch of research. Pasteur was connected with its beginnings and his discoveries in the cure of hydrophobia were well known. He was also the discoverer of the interesting fact that ordinary yeast after being used up in the formation of alcohol, reacquired the power of fermentation after exposure to oxygen. Koch's researches had led to the separation of the active principle of cholera and other diseases and he had also done much in adding to our knowledge of the causes and nature of consumption. There were three means of safeguarding against infectious diseases : (1) vaccination with an attenuated virus, (2) accustoming the system to resist diseases by inoculating with special matter, (3) sanitation. The relations between science on the one hand and art and religion on the other were then discussed. The lecturer concluded by reference to the imperfect modern method of education, and stated that he fully believed the near future would bring about great changes in all such matters as he had referred to.



NATURE AND NATURALISTS AT BOOKHAM.

AN ACCOUNT OF A WHIT-MONDAY RAMBLE.

THE twenty-second of May, as I need hardly remind the readers of the *NATURALISTS' JOURNAL*, was a glorious day and the members of the Lambeth Field Club who met together on that morning in Waterloo Station seemed, as was natural, to have made up their minds to have a very enjoyable holiday among the beauties of that part of Surrey which had been fixed upon for the excursion. Those who were especially interested in the various phases of life to be found within the watery limits of a pond, including myself, were extra jubilant, as the programme that had been sent to each and every member some weeks before contained a promise of a splendid harvest of pond life. Owing to a freak on the part of the railway company, however, the route which we originally intended to follow had to be somewhat changed, and the distance to be traversed made

shorter, but this if anything was an advantage, for we should be able to make at once for the "magnificent chain of ponds" (as the exalted language of the programme had it) on Bookham Common, and so have time for more extensive researches into the natural history of the locality.

Starting by the 9.25 train, it seemed but a short time ere we arrived at our destination, Effingham Junction, from whence we were to make our way to the above-mentioned ponds. Our genial and learned conductor, Mr. Edward Step, a typical Surrey naturalist, was awaiting us at the top of the flight of steps that led up from the station, and having exchanged greetings, we at once struck out for more rural scenes, which were close at hand. Keeping along a dry, parched and "lumpy" roadway that ran alongside Effingham Common, we at length emerged into a more open and expansive region. The orange tip butterfly (*Anthocharis*, or *Euchloe cardamines*) was frequent about the hedges here. The party stopped to examine a small patch of the not unhandsome plant known as the "needle whin" (*Genista anglica*), with its thorn-set stem and pretty yellow Papilionaceous flowers. This, said our conductor, was the plant which the Plantagenets (e.g., "planta genista") were in the habit of wearing in their head-gear as a distinguishing mark of their family. As we turned away from the historical plant a lapwing came flapping across the common, uttering its cry of "peewit" as it approached.

Having gained the further side of the common, we proceeded to ascend a gentle upward path fringed by tall trees, and obtained a fair view of the surrounding country on gaining the top, which was open. The wood sorrel (*Oxalis acetosella*) occurred about the grassy patches by the wayside; it was a plant which our conductor had had great success with in his garden, though another of our members had failed in its cultivation. The pretty little blue speedwell was also a frequent plant. A tall lime tree near by had its trunk closely grown over with grey lichens, a sign as our leader reminded us, of the purity of the atmosphere.

The route, as I have mentioned, was not the one that had been originally mapped out, so that at times we found ourselves in places that even our conductor knew not of. Having reached the top of the hill, we came to a halt to discuss the most likely direction to take, and finally descended among the trees on our left, soon reaching level ground. The little caterpillars of the green oak moth (*Tortrix viridana*) were dropping in numbers by their slender lines, and swaying about in the breeze, and their silken cocoons constructed in the rolled up edges of the oak leaves were of course plentiful.

F.P.P.

(To be continued.)

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents*)

A WHITE ROOK.

A fine specimen of a pure albino rook (*Corvus frugilegus*) was captured here recently, the bird is in fine condition and is without the slightest trace of a single dark feather.

Hornchurch.

A. ROWE.

THE MAGPIE MOTH.

In answer to the query in the June number of the NATURALISTS' JOURNAL, I may say that in 1892 I met with *Abraxas grossulariata* somewhat more abundantly than W. Nicholson, Junr. In London I found them frequently at Paddington and Kensington Gardens. I might also mention that the larvæ were plentiful enough at Epping Forest, near Chingford, but strange to say the imago was rather scarce in that locality, I having met with only about four or five specimens during the season.

J. F. CORDON.

NOTES ON NATURAL HISTORY IN THETFORD DISTRICT.

The neighbourhood of Thetford is one that possesses great attractions for students of natural history in all its branches. Within a radius of ten miles there are huge tracts of heath and warren, large woods and plantations, marsh land and rivers, and several large sheets of water called "meres." Thus it embraces varieties of country which serve as the habitat of most British inland species of birds.

The "brecks" of this district will long be remembered by naturalists as the last stronghold of the great bustard, and perhaps in a few years time as that of the Norfolk plover. This bird nevertheless seems to be as plentiful as usual this year on Thetford Warren. On May 11th, during the evening, I heard about twenty calling to one another at one time; their note being first short and indistinct, then immediately shrill and continued. Several ringed plovers or "stonehatches" were busy with their nesting operations and together with the lapwings seemed to greatly resent my intrusion.

The wild fowl on our rivers and meres are certainly increasing, no doubt no account of the decreased navigation. On Jan. 19th I counted 27 coots on the Little Ouse near the two-mile bottom, and on March 31st there must have been over 100 on Fowlmere, besides huge flocks of wild duck. I saw a brood of six moorhens at Euston on April 29th, and over a dozen in a reach of about half a mile on May 13th.

The main body of swallows arrived earlier this year than last but whereas I saw the first arrivals on April 6th in 1892, I did not see them till the 13th this year, which is, I think, the average date of their arrival here. Swifts or "screech owls," as

they are often called, arrived on April 24th, and almost immediately commenced their nests.

The cuckoo seems unusually common in the neighbourhood this year. On the afternoon of May 13th I noted a rather peculiar occurrence. A cuckoo by some means had offended a sparrow which very courageously attacked him as he was flying and not till the sparrow had been repulsed five times, the last very severely, did he desist from the attack.

Before I close I should like to mention a singular nest in my possession found last year at Lakenheath. A wren had built its nest in a thorn hedge when a lazy linnet thought some trouble might be spared by using the dome of the wren's nest for the foundation of its own, which he did forthwith, and both were sitting on their eggs at the same time. The wren's feelings may be imagined but not described.

THE WANDERER.

OÖLOGICAL NOTES FROM LUDLOW.

On March 25th I found a long-tailed titmouse's nest with five eggs; it was placed in a blackthorn bush in a hedge and about four feet from the ground. Is not it unusually early for this bird and is not the situation rather low? as W. Gorden in "Our Country's Birds," says that it is generally built about ten feet from the ground in tall hedges or trees. I have also taken two water-ouzel's nests, the first on March 28th with five eggs and the other on March 31st, with two. I took my first nest this season on March 9th, a blackbird's with three eggs, quickly followed by thrushes' and hedgesparrows'. Yesterday (April 13th) we went to a magpie's nest in a very large oak tree and threw several stones at it, two of which hit the nest itself, to see if the bird was sitting, but as it did not fly off we concluded that they were both away. When my friend climbed to the nest, however, we were both greatly surprised to see the hen bird fly out. There were six eggs in the nest, all alike but one, which had the small end thickly blotched. I should like to know why the bird remained on after its nest was hit hard twice? Was it so occupied in incubation as not to notice it or did it feel secure in its nest, built as it was on the top of an old oak tree.

Ludlow.

E. H. BLACKMORE.

[The date on which the long-tailed tit's nest was found is not exceptional; I have known instances as early, although April is the usual time. The height of this nest is not out of the common; I have seen five nests this season in Ashtead Woods, none of which were more than five feet from the ground, while one was less than four feet. On the other hand nests which I have found in Highgate Woods, where they would be frequently molested, have been placed at some height in small lichen-covered oak trees. It would be hard to say what caused the

magpie to sit so resolutely, it chiefly depends upon the state of incubation, but most members of the Corvidæ are unusually wary.—H.K.S.]

NOTES AND NEWS.

DURING the past few months the necessity of enlarging this Magazine has become very apparent to us, and many are the communications and suggestions we have received upon the subject from our readers. The majority of these letters contained practically the same suggestion, viz., that we should enlarge and improve the magazine *at once*, even if we had to raise the price. This latter, however, we were loth to do, and yet the present low price allows no margin whatever for enlargement just now. We have therefore, after due consideration, come to the conclusion that it will be best to raise the price, and so enable ourselves to enlarge and improve the magazine in a way which we no doubt will straightway find it a place in the hearts of all our readers—and a good many more besides.

We have, therefore, to announce that, commencing with the September number, the NATURALISTS' JOURNAL will in future consist of 20 pages, and a coloured wrapper, the price being 2d. only. An abundance of interesting articles and other matter will be given, while there will also be good illustrations. We do not think any reader will object to paying the extra 1d. per month, as the great improvement in the magazine will prove an ample compensation. As it is at present we have been compelled to keep many contributions several months before being able to insert them, but with the greatly increased space contributors may in future be able to see their contributions appearing in the issue they were intended for.

The annual subscription will in future be 2/6 including postage, and all subscribers who have paid at the old rate will continue to receive copies at the rate of 2/6 until the amount unexpired is settled, although perhaps some may care to send us the difference of 1d. per month to carry their subscriptions on to the end of the volume.

All subscribers are eligible as members of the P.N.S., and can have their names registered by sending six stamps to the Secretary, viz., Albert H. Waters, B.A., M.C.S., &c., Cambridge. Old members need only intimate their desire to have their names re-entered in the Society's books.

REFERRING to Mr. Lyschinska's letter in last month's Correspondence column, Mr. S. L. Mosley, F.E.S., of the Beaumont Park Museum, Huddersfield, sends us his catalogue

containing prices of many educational and other cases of birds, injurious insects, orders and transformations of insects, &c., &c. A catalogue may be had on application to above address.

ESSEX FIELD CLUB EXCURSION.—On Saturday, June 17th, the Essex Field Club held a very pleasant excursion. At eleven o'clock about thirty members started in carriages from Chelmsford railway station, and were driven through Great Baddow and Howe-green, past Great Gibcracks to the hamlet of Bicknacre. Places of interest *en route* were pointed out by Messrs. E. A. Fitch, C. Smoothy, F. Chancellor, Walter Crouch, E. Durrant, and B. G. Cole (the last-named in the absence of his brother, Mr. W. Cole, through ill-health). At Bicknacre the carriages were dismissed, and the party walked on to Danbury, where an excellent luncheon was well served at the Griffin Inn, by Mr. and Mrs. Reynolds. The fine and extensive views from Danbury Hill were greatly enjoyed. In the afternoon the nothern side of Danbury Hill was traversed through Bell Hill Wood and across Lingwood-common to Old Riffhams, thence through other woods and across Woodham Walter-common to Woodham Walter Church. In Bell Hill Wood, belonging to Mr. Smoothy, the nest of a nightjar (*Caprimulgus europaeus*) was discovered, containing two birds, and in another place a stoat was captured. From Woodham Walter the walk was continued to Maldon, whence the excursionists were able to depart by the seven o'clock train. They arrived in the ancient borough rather the worse for wear, but not unduly fatigued.—*Essex County Chronicle*.

THE SUSSEX AND HANTS NATURALIST.—The July number of this magazine is enlarged to the extent of a coloured wrapper, and contains the first of a series of articles entitled "Sketches of British Wild Flowers," by H. Durrant, the conclusion of Mr. Turle's "Visit to the Blasket Isles," the "Entomology of the Month," by A. H. Waters, B.A., and other items.

PERIODICALS, &c., RECEIVED.—The "Conchologist," June quarter; "Sussex and Hants Naturalist," July number; "Amateur Naturalist," July number; and the "Western Gazette," &c.



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EXCHANGE four years of the "Entomologist," 1889-1892, clean and unbound, for Natural History books, specimens, &c.—A. S. Cooke, 31, Lower Road, Rotherhithe, London, S.E.

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TO CORRESPONDENTS.

B. R. H., HIGHGATE.—Received and shall be inserted.

W. W., ALFORD.—We are willing to do as you suggest; the contribution shall appear.

OWING to want of space the "Practical Naturalist" article had to be omitted this month; next month an article on Collecting and Preserving Spiders will appear.

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With the assistance of ALBERT H. WATERS, B.A., M.C.S., &c., and A. FORD.

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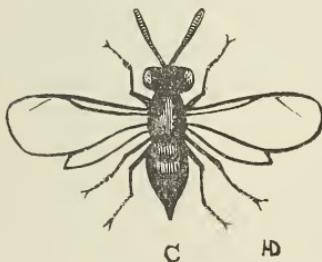
**A GLIMPSE AT THE CABBAGE AND
SOME CABBAGE EATERS.***

By H. DURRANT.

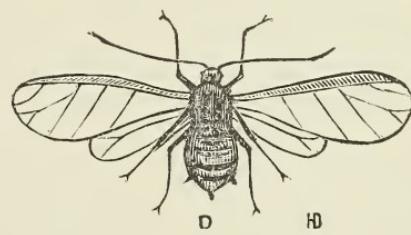
Part I. THE CABBAGE AND SOME VARIETIES.

(Continued from page 5.)

THE Saxons were the first in England to favour the cultivation of the cabbage though probably the one they grew was merely the wild one of the sea shore, but be this as it may, it must have been a great favourite with



C. *Pteromalus puparum* (mag.)



D. *Aphis brassicae*, male (mag.)

them, even in this poor form—hard, woody, and except in the spring, almost uneatable from its very rankness—for so highly did they esteem it that the second month of the year was called “Sprout Kale,” because it was the month in which their principal and favourite garden vegetable began to grow.

* Read before the North Kent Entomological and Natural History Society on March 1st, 1893.

Coming down to about the Sixteenth century when Gerarde flourished, we find that varieties had sprung into existence, for in his "Historie of Plantes," he gives descriptions of several kinds of Cabbage and Cauliflower. In Scotland the cabbage must have been cultivated long before Cromwell and the Commonwealth, for "kail" is frequently alluded to in the songs anterior to this date and also occurs in the Scottish legends. Notwithstanding this fact, the date of the introduction of the plant here is generally attributed to Cromwell's time, and the introduction itself by his soldiers, but it must have found a place in the peasants' "kail yards" perhaps centuries before then.

Like the others of its genus the cabbage possesses very high anti-scorbutic properties depending, it is supposed, on an acrid and volatile oily principle of which the chemical constituents are imperfectly understood. The plant has also a large share of azote (nitrogen) as is usual with cruciferous ones. Indeed we may perhaps go even so far as to state that an order of plants possessing a greater share of the element does not exist.

Nevertheless cabbage, unless eaten very fresh and tender, is painfully incapable of digestion and tends decidedly to produce flatulency. And yet the Germans have a dish prepared, it would seem expressly to favour the above result. It is called *sauerkraut*, and is concocted as thus:—The cabbage is cut into small pieces and a layer about three inches thick is spread at the bottom of the barrel. Over this, salt, unground pepper and cloves are thrown. Following this is another layer of cabbage, then another dose of salt, etc., until the barrel is completely filled. A board is placed on top of the mass and heavily weighted. In this state it remains for about a fortnight during which time an acid fermentation sets in and water rises to the top. The smell, as one can very well suppose, is not nice to English nostrils, but the stolid nasal-hardened folks place the whole concern down the cellar where it remains in good condition far into the spring. It is a national dish and very greatly esteemed and—well—such is life.

And now for a glimpse at *some* of the varieties and their classification and then I think we may leave the subject and get on to our "cabbage eaters." Europe must ever claim the honour of being the scene of the metamorphoses of the cabbage for it is here that the many varieties that have all had their origin in the sea shore progenitor have been formed—chiefly since the time of the ancient Greeks. An Eastern theory of the modifications has at times arisen but has as rapidly fallen again. The fact of the common names being so numerous in European languages and so rare or modern in Asiatic ones is in itself almost enough to dispose of such an opinion. Theophrastus notes three varieties, Pliny six or seven, Tournefort twenty, De Candolle more than thirty, and these exclusive of gardeners' crosses, almost indis-

tinguishable from each other in many cases, and whose name is legion.

The following is the classification adopted by Dr. Lindley and which covers well the whole variety ground :—(1) *All the leaf buds active and open.* (2) *All the leaf buds active but forming heads.* (3) *Terminal leaf buds alone active and forming a head.* (4) *Terminal leaf bud alone active and open with most of the flowers abortive and succulent.* (5) *All the leaf buds active and open with most of the flowers abortive and succulent.*

The first division will include such varieties as the kale or greens. It is typically represented by the wild cabbage:—*Brassica oleracea sylvestris*, wild cabbage, sea-colewort, etc. The wild form *B. oleracea acephala*, borecole or green kale. Heads of leaves spreading. According to the degrees of this so the Germans distinguish the varieties as Blatt Kohl, Rosen Kohl, and Schlitz Kohl. There are dozens of forms of this variety, some known as Palm Kale, Thousand-headed Cabbage, Cow Cabbage, Ragged Jack, Ribbed Cabbage, Scotch Kale, etc. The distinction of this form is that the leaves do not connive as in the other varieties. It is perhaps one of the earliest removes from the species. The Scotch Kail, still found in cottage "kail yards," used to be very extensively cultivated, but German Greens, a more modern variety, has almost superseded it. Scotch Kale sends up first a stout stem, this grows to a height of perhaps two feet, and is covered with thick, purplish, close-set leaves. The lower leaves are taken off as wanted and used as the chief ingredient of a popular dish, a broth be it understood known as "Scotch Kail."

In the channel islands there is a very remarkable form cultivated belonging to this first division. It is known as the Jersey or branching cabbage. It grows to a height of about eight to ten feet and sends out branches from the central stem, this latter being thick and strong enough to form walking-sticks, or even rafters to receive thatching, and indeed is used by the inhabitants for such purposes. *B. oleracea costata*—large ribbed cabbage or *Couve tronchuda*. This variety was first introduced from Trauxada in Portugal, in 1821. It is a very distinct form characterised by the thickened and succulent midribs which are the parts eaten.

The second division contains the Brussels Sprouts. *B. oleracea gemmifera*—Brussels sprouts. This was originally cultivated round Brussels, and it is only this last half century that it has become so generally known and esteemed in England. The plant forms a head like a savoy, but in the axils of its leaves, along the whole length of its stem the small sprouts we know and appreciate so well are produced.

The third division includes the common cabbage, savoys, etc. *B. oleracea capitata*.—Red and white cabbages. The leaves are

smooth and not crumpled as in the savoys and other varieties. Perhaps no other variety contains such an immense number of forms as this one. In the white cabbages, a classification of De Candolles' exists as follows:—(1) with oblong heads (2) with conical heads (3) with large round heads (4) flat heads (5) obovate heads. Not a very elegant one, certainly, but expressive and concise. Each of these sorts has good points either in size, flavour, or season of maturity. The red cabbage is a well marked variety with purplish brown leaves and is chiefly used for preserving.

B. oleracea bullata—Savoy cabbage. This differs little from the rest of the heading or hearting cabbages. Its leaves however are wrinkled in a reticulate manner. It is a useful winter vegetable of over three centuries of cultivation, but is perhaps on the whole less delicately flavoured than some other varieties. And now we come to the fourth class. This includes the Cauliflower and Broccoli.

B. oleracea botrytis cauliflora.—The cauliflower is only a cabbage with an abnormally developed flower head. Instead of the leaves being eaten in this variety it is the succulent flower head that forms the esteemed portion. It is generally of a creamy white colour though sometimes reddish purple. Italy is credited with the honour of being the origin of this form. The precise date of its introduction into this country is uncertain. Gerarde however mentions it so that it is probable that it was in cultivation during the 15th century if not before.

B. oleracea botrytis asparagoides.—The Broccoli, a variety of the Cauliflower and similar in appearance. Introduced in last century from Italy, since then many sub. varieties have arisen, each claiming some particular feature which the others have not. Miller mentions two kinds (1724), the white and purple. The stem of the Broccoli is longer and stouter, and the flower heads smaller than the cauliflower, its more hardy character too, makes it a welcome addition to our gardens during the winter months, when the cauliflower cannot be obtained. When the flower heads are of the creamy white colour that characterises the cauliflower, the two plants are scarcely to be distinguished from each other. The Broccoli is less delicately flavoured than the latter.

The fifth class is represented by Broccoli Sprouts. This form is only of recent introduction. It is similar in growth to the Brussels sprouts excepting that the sprouts springing from the axils of the leaves are flowering ones. Before closing the list of varieties I must not omit to mention the curious modification known as *Kohl Rabi*. This is the *B. oler. Kohl Rabe* or Turnip stemmed cabbage. In this peculiar plant the stem is much swollen at the base of the leaves and resembles a turnip from its tumid nature. The leaves are eaten as other greens are, and in addition there is the thickened root which is boiled like a turnip, much resembling that useful culinary vegetable in taste, or used

as a flavouring for soup, etc. It is not yet cultivated half so much as it deserves.

The above enumeration of the principal modifications the wild cabbage has undergone since it was first induced to change its primary form, and become great, is, I am fully aware, far from being complete. Gardeners have crossed and recrossed to such an extent that it is a wonder to me names have held out so long for conferring on them the dignity (or indignity often times), whereby we may recognise and distinguish the good from the bad, the delicate from the acrid. The task of wading through so many irrelevant names would not only have been very painful to myself but would have aroused your worthy ire to an ungovernable pitch, resulting perhaps in an Irish Wake, with candles, coffin, and all accessories!

This was beyond my intentions, when I set out to write this paper at your secretary's desire and I am resolved it shall so remain. I therefore beg your further kind attention to the second part of my discourse.

(To be continued.)

IN A CANADIAN FOREST.

By H. K. SWANN.

Early on the morning of one 15th of April, I started from Halifax (Nova Scotia) for a tramp through the great woods running back from the Bedford Basin.

The day opened very dull and cloudy and there was not a breath of wind to be felt, while there seemed to be a promise of snow later in the day. I left home soon after daybreak and after a short walk struck the woods near Three-mile House, on the Bedford Basin, and from there I passed through continuous dense woods in a north-westerly direction all the morning. The surface here was extremely irregular, the whole district consisting of a succession of granitic outcrops. Almost every ridge or rise of the ground was merely a protruding mass of granite, while boulders and fragments of every conceivable size and shape covered the ground in every direction.

Soon after entering the woods I came upon a party of Golden-crowned Kinglets (*Regulus satrapa*) in a dense under-growth of young firs and shot one or two examples: This little bird is in appearance and habits very similar to our goldcrest (*R. cristatus*) the chief difference, to my mind, being in the larger size and stouter bill of the American bird. Some of the firs here were of

a prodigious size, and near the summit of one I noticed what appeared to be an unfinished nest of a hawk or crow.

A little further on I came to a small sluggish stream flowing through a swampy hollow. The water was of the colour of brandy from the amount of decaying leaves in its bed, while it was fringed upon either side with curiously contorted swamp bushes. Here and there a fallen trunk bridged the stream, but I had learnt by experience not to trust these seeming bridges, for although looking sound enough to the eye, they are usually mere shells from which the heart has long since rotted away. I noticed, as an odd circumstance, that for some distance this little stream formed an abrupt boundary between two totally different descriptions of woodland, for while upon one side the woods consisted of (at this season) bare and leafless birch and similar trees, on the other side of the stream rose dense and funeral-looking spruce-woods, certainly the thickest and most gloomy woods I came across in this neighbourhood. I heard a woodpecker tapping here and followed it a short distance but could not get a view of it; I also noticed a pair of brown creepers (*C. familiaris americanus*) a bird which is almost identical with the European tree-creeper and possesses precisely the same habits.

Proceeding along this stream, I noticed a white-breasted nut-hatch (*Sitta carolinensis*) in a fir-wood, and also several chickadees (*Parus atricapillus*) a species which seems to me to be intermediate between the coal and marsh titmice of England. The trailing arbutus, the exquisite little mayflower—emblem of Acadia—abounds in these woods as soon as the snow has fairly melted.

Leaving the stream I then struck through the forest until I came upon a long ravine, in the dense woods, with sloping sides and an almost level bottom, which was sparingly timbered and with a sluggish stream winding along it, and on which the snow still lay thickly as it also did in many spots in the surrounding woods. I saw here a large nest of the American crow (*C. Americanus*). It was placed fully sixty feet up in the fork of a large and almost limbless maple, and I did not attempt to ascend as I had no climbing irons with me. I shot a male junco, or black snow-bird (*Junco hyemalis*) here and noticed one or two of the common red squirrels which are particularly abundant in this spot; there was also a little bird singing in the top of a small fir but I could not obtain a view of it. Crossing the ravine I pushed on again through very thick woods, varied occasionally by higher and more open rocky ground covered mostly with scrubby brushwood, but saw nothing more and so retraced my steps and struck a track leading back to the Bedford Basin. Just here the trees were chiefly hemlocks, and veritable giants of the forest they were, many of them being fully four feet in diameter near the ground and towering to an immense height.

While passing down this track the snow commenced to fall

gently, adding to the lonely and desolate nature of the forest. I noticed many woodpecker's burrows in the summits of the bare and whitening trunks that met the eye on every side, but I saw very few birds of any kind until I came to a low swampy firwood, in the midst of which was a shallow pond where the frogs were croaking dismally. Here a large barred owl (*Syrnium nebulosum*) flew close past me with its peculiarly light and noiseless flight, and settled on a dead tree a short distance behind. The habit of flying in the daytime in this species is well known; it was shortly after noon when I saw the present individual and snow was falling rather fast at the time. I judged it to be a male, the female being considerably larger in size, and in fact almost rivalling the great horned, or American eagle owl (*Bubo virginianus*).

Continuing on my way I disturbed an American pine grosbeak (*P. enucleator canadensis*) from the ground at the foot of a fir tree; this is a very handsome scarlet-tinted bird and is by no means unknown in the province at certain seasons, although breeding further north. Pushing on again the great foggy expanse of Bedford Basin soon came into view below me, and before long I reached the road which winds round by the water's edge and started homeward well satisfied with my day's tramp in a Canadian forest.

NATURE & NATURALISTS AT BOOKHAM.

AN ACCOUNT OF A WHIT-MONDAY RAMBLE,

(Continued from page 18).

We came unexpectedly on a fine pond on emerging from the wooded district, rendered specially beautiful by the numerous plants of *Ranunculus aquatilis*, with their conspicuous white flowers, round its margins, while further out were the broad, parallel-veined leaves of the floating pondweed (*Potamogeton*). About the banks also grew the brooklime (*Veronica beccabunga*) bearing small light-blue flowers at the axils of the leaves.

Our conductor, who was one of the "pond men,"—as another member termed them—began operations by dipping a gravy strainer, attached to a stick, in the water. This useful instrument he had one day appropriated from the kitchen, in order to test its efficacy for such purposes, and having found it suited admirably and the generous "household gods" having refused to reclaim it for their own uses, it had now become a regular part of the collecting outfit. Among the treasures obtained were several of the

larvæ of a small caddis-fly (*Setodes*) ; all the insects of this family live in the water as larvæ, and protect themselves from their enemies by sticking together fragments of stones, shells, vegetable materials, &c, and so forming hollow cases in which they live. The cases of the larvæ of *Setodes* appeared to be made up of cemented grains of sand, and at their mouths the little black heads of the inmates were soon protruded when the cases were put in water. Several small water-beetles and a good specimen of the water-bug (*Carixa geoffreyi*) were procured, but perhaps the most numerous of the inmates of this pond were the small delicate looking larvæ and pupæ of a dragon-fly (*Agrion*), while the perfect insects flitted about the banks looking like little blue pencils suspended in the air or darting mysteriously forwards, for the vibration of the wings was so rapid that they were quite invisible. The Agrions were very small insects compared with a great sweeping creature that seemed to be all over the pond at once, and which apparently viewed with scorn the evolutions which were being made by a very enthusiastic member of the club who was exceedingly anxious to secure it. This he ultimately succeeded in doing, however, and soon after obtained another. The species was found to be the well-known *Libellula depressum*. The same gentleman was also fortunate in securing a fine specimen of the "cardinal beetle" (*Pyrochroa coccinea*) on the border of the pond.

On leaving this productive spot, we proceeded again into a well wooded district, but managed to take a path that led directly away from Bookham, a fact of which we were made aware on enquiring of some "natives." We then retraced our steps and got "on the right tack," keeping through the wood, and soon arriving at our destination. On the way we came upon a patch of the very curious plant known as "butcher's broom" (*Ruscus aculeatus*) so named from it having been formerly used by butchers in sweeping their blocks. The plant has no true leaves, but the stem produces flat, tough, sharp-pointed, leaf shaped projections in the centres, and towards the bases, of which the tiny inconspicuous flowers are produced. On this occasion there were no flowers, but on an earlier excursion of the club (in April) the members had an opportunity of seeing the plant in bloom in Ashtead Woods.

Bookham Common suddenly opened before our gaze as we reached the edge of the wood, and as it was past noon, we sat down under a spreading oak and regaled ourselves with such delicacies as we had brought with us, regardless of other kinds of grub peculiar to the region immediately above us. A prominent red building at some distance over the common was then made for ; it was known as "Merrylands," and it was here also our conductor had arranged for tea later on. The establishment was well conducted, and the hotel accomodation appeared to be ex-

cellent, as was testified by the busy time the proprietors were having with their numerous patrons.

Again assembling, the party (with an increase of two other members) then proceeded to view the "chain of magnificent ponds," At first our spirits fell somewhat, for in pond No. 1 we beheld merely a dry or almost dry hollow, and a few of the party, I am sorry to say, began to be sceptical. That it had been a pond there was no doubt, for the *Ranunculus aquatilis* still flourished in its former basin, but this was no criterion of its recent "wateriness," for the plant in question survives long after its natural surrounding of water has been denied it. It is enabled to do so from its possessing two kinds of leaves, one kind being adapted for a subaqueous position and the second resembling the leaves of a land buttercup and always standing above the water. It is, of course, the possession of these latter that saves the plant from immediate extinction when it finds its water supply "cut off."

On our reaching the second pond—or more strictly the first—the criticisms were reduced to a minimum, for here, although the want of rain was clearly perceptible, the extent of the pond was such that the deficiency of water was of little moment. The banks on the side which we approached were rich in the tall and not unhandsome plant known as the marsh horsetail (*Equisetum limosum*), and here the erstwhile gravy-strainer of the energetic conductor was especially useful, as its solid metal readily parted the stems and of course could not become entangled as an ordinary net would most probably have done. The small snail *Planorbis albus* was very frequent, and the genus was also represented by *P. vortex*, *P. marginatus*, *P. complanatus*, and *P. nautilus*. We were specially on the look-out for water-spiders here, as the conductor had informed us of their occurrence, and suddenly the capture of one was announced, and the before-mentioned gentleman of dragon-fly renown, who, like a special correspondent of a newspaper, was ever "on the spot," quickly transferred it to a convenient receptacle in the shape of a lemonade-bottle, his other vessels being already somewhat replete with specimens. This, however, turned out to be a spider of another species, and not the water spider *par excellence*. It was most probably *Dolomedes mirabilis*, and the most noticeable point in regard to it was the globular egg-cocoon which it was assiduously carrying. A little later the true water spider (*Argyroneta aquatica*) turned up and was bagged—or bottled. Then a "big haul" of toad tadpoles was made, and, well satisfied with results so far, we moved on to No. 3, on the way discovering a few plants of the "creeping jenny" (*Lysimachia nummularia*) on a bank.

The party took a rest beneath an adjacent tree before proceeding to investigate the natural history of this, the last of the "magnificent chain of ponds." Crawling about the grass, &c, at the base of the said tree, were two stone-flies (*Perla*) which were easily

captured, as neither attempted to fly. The same remark applies to another insect discovered among the grass, &c., the remarkable *Raphidia* or "snake fly," a most extraordinary looking object with its elongated "neck" or thorax, which was kept moving, though rather stiffly, from side to side as the insect walked, and when it stopped was raised from the ground in a very "cute looking" manner. Neither of these insects are true flies (*Diptera*), but belong to the same order as do the dragon-flies, viz., *Neuroptera*. The pond we now turned our attention to was of a different type to the previous ones. The banks were rather steep and there was not much vegetation upon them, but in the water there was a great abundance of the Canadian pondweed *Anacharis alsinastrum*, an excellent plant for the aquarium. It was introduced into this country accidentally, and at once proceeded to announce its arrival by spreading with great rapidity all over the country, and now it is a very frequent thing to meet with it. As, however, only the male plant was imported, the method of increase is not by seed, and this will perhaps bring some consolation to those whose canals and other waters have been choked up by this too-evident immigrant. The water spider was an inhabitant of this pond also, and I soon became the happy possessor of one. Caddis-worms were very common, and one case was made up entirely of the shells of small water-snails (*Planorbis*), but the usual building materials were pieces of aquatic plants. The common, but no less interesting Hemipetron, the water boatman (*Notonecta glauca*) occurred, and also the very similar larvæ this being one of the insects that pass through an "imperfect" metamorphosis (see Mr. Durrant's recent instructive papers on this subject). Two of the party who had been having a stroll on their own account here returned, one of them having secured a very nice lizard for his vivarium.

We then left the ponds, and after a short walk across the common, arrived in good time at the before-mentioned red building, where we sat down to a very enjoyable tea in a sunny and well ventilated apartment. Here, though the appetite for food was appeased, the appetite for collecting was not, and one of the members who had been exploring the neighbourhood promised us some more good finds at a pond at no great distance, which was situated within the wooded district from which we had some hours before emerged. Thither, therefore, the party bent their steps, and after a cool and shady avenue through the wood had been traversed, the pond in question was sighted. It was of but small dimensions but looked deep, as still waters are wont to do in actual reality as in proverbs. A drag net possessed by one of the excursionists was here brought into requisition, the pond being eminently suited for such an instrument. Up came a huge mass of black mud, weeds, and debris generally, which was turned out on the bank and immediately became the centre of

attraction. The chief objects that were taken from this "mine of wealth," were caddis-worms, the larvæ of dragon-flies of the genera *Æschna* and *Libellula*, the flat leaf-like water scorpion (*Nepa cinerea*), the active "water gnat" (*Gerris lacustris*), the great grub of the water-beetle (*Dyticus marginalis*), and also the perfect insect, many smaller beetles, *Limneaa peregra* and other molluscs, and plenty of small newts: *Molge punctata*, *M. crista-*
tata, and one specimen of the local *M. palmipes*, with distinct webs between the hinder toes. There was a smaller, but scarcely less productive pond at a short distance, and from this we got a quantity of the Canadian weed in excellent condition. But the principal captures here were the great newts that were turned out of the net, splendid fellows in full breeding dress, and as large as I have seen them anywhere. Eagerly were they pounced upon and consigned by their captors to temporary durance vile in bottles and other convenient receptacles.

The party having satisfied their desires at this pond, we then made a move in the direction of Leatherhead, but our conductor took us a more roundabout way in order that we might feast our eyes on a certain spot that was unanimously declared when we reached it to be one of the most beautiful places in Surrey. It was a ford over the river Mole, and from the little rough picturesque bridge we gazed on the clear splashing waters beneath us and then at the lovely banks studded here and there with willows and gradually converging as the river became narrower and deeper on either side of the shallow ford. The sunset and the dancing may-flies, as they rose and fell in the cool evening air, added greatly to the beauty of a scene which I, for one, shall not easily forget, and we reluctantly passed on across the bridge and continued on our way.

One other circumstance deserves record. A fine group of the tough and leathery fungus, *Polyporus squamosus*, having been sighted growing on an old tree in a small plantation, permission was obtained and they were cut down, the biggest specimens being presented to our conductor for his kindness in taking charge of the party and giving us the benefit of his abundant knowledge. Other portions were given out to those that desired them, myself included. As I passed subsequently through the London streets bearing my own particular "chunk," remarks thereon, emanating from holiday makers, were borne softly to mine ears on the breeze, such as "What're goin' to do with all that cat's meat?" and "Take away that almond rock!"—F.P.P.

At the Equator the limit of perpetual snow is 14,700 feet.

Polar spots on the sun were observed by Fabricius and Harriot in 1610,

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*)

ARGYNNIS EUPHROSYNE.

I see in the Correspondence column for July, that *A. euphrosyne* was taken near Lincoln, on April 26th. On the 25th, I was passing through West Blean Woods, between Herne Bay and Swalecliff, and saw several fritillaries, but not having my net with me I made no captures. The following day I went up to the woods to get some specimens and saw several of which I caught eight, all in very good condition, and on examining them found them to be *A. euphrosyne*. I see that *euphrosyne* was taken April 14th, in Devonshire.

Herne Bay, Kent.

ARTHUR E. MALAKER.

[I met with *A. euphrosyne* on Epsom Common, as early as April 23rd this season, but no doubt the 26th is a very early date for a northerly locality like Lincoln.—H.K.S.]

THE COLOURING OF BIRD'S EGGS.

I noticed a few remarks on the above subject in the April No. of the N.J., and I think some of my experiences may be of interest to your readers. I have taken a tree sparrow's nest with as many as nine eggs in, all dark, in a hole in an apple tree in Mr. Pignell's orchard near Cheltenham, and several nests with seven, some all light, and some dark, and others mixed. Last year there was a robin's nest with six white eggs at Abbeyholme, Christ Church, Cheltenham. I took a sparrow hawk's nest on Shaderton hill with all the eggs white; it was built in a fir tree. I have also taken a white egg out of a cuckoo that I had to stuff. I once took a blackbird's nest with five light green eggs in the Woodlands, the Park, Cheltenham. I took a nest of moorhen's eggs without any spots, at Bridgend farm, and also a set of coot's without spots, near Andoversford. I got a man to take a green woodpecker's nest for me on Mr. Fowler's farm near Cheltenham, it was in a hole in an ash tree, and there were seven eggs in it, two of them having a few red spots on them. I have also had both redstart's and starling's eggs spotted with very dark red, nearly black. I have taken a wheatear's nest with six eggs, three of which were pure white. I can fully endorse what your correspondent says about the thrush, yellow-hammer, linnet, green-finches, wren, chaffinch, and long-tailed tit; all these nests I have taken with one or more white eggs in.

Cheltenham,

G. J. WHITE.

WINTER NOTES FROM SOMERSET

The following brief notes may interest some of the readers of the N.J.—December 17th, noticed several small flocks of bull-finches, also some long-tailed tits, and golden-crested wrens. 19th, Twelve magpies and two jays got out of a small wood. Noticed some goldfinches among chaffinches; tree-creepers seem to be very common this winter. 20th, A goldcrest came into the verandah and crept all over the rose bush. Last year one used to come every morning. 22nd, Saw a sparrow with white wing-feathers. Jan. 4th, Two lesser spotted woodpeckers in the garden—the men about here call them the French woodpecker Had a heron given me, it is a young bird 6th, Great numbers of larks passed over from the north, driven by the snow which fell in the North-West. 9th, The larks are passing north again in small parties, flying low down. 10th, The larks are still going north.—P.B.A.

JOTTINGS FROM MY NOTE BOOKS.

Wishing to see how quickly a barren piece of ground could be clothed with verdure in summer, or, in other words, to what extent seeds could be transported by birds or air currents, I deluged, with hot water, a portion of ground, chiefly composed of gravel, and so effectually destroyed any seeds, etc., which might have been in it and thus reduced it to absolute sterility. In less than three weeks the following plants made their appearance:—Grass, sow thistles, groundsel, Anthirrhinum, garden snapdragon. I fancy the seeds of the snapdragon and grass were conveyed by the feet of sparrows as these birds were constantly hopping about the garden and then over my barren patch. I did not count the individual plants but the barren tract became clothed with vegetation in five weeks.

* * *

What a remarkably intelligent and cunning moth *Campylogramma bilineata* is! It is not only very adroit at evading capture, but also very artful at escaping out of the net when caught if it possibly can.

* * *

The larva of the common cock chafer (*Melolontha vulgaris*) lives more than five years in that state, the beetle coming out in the sixth year! It feeds on various roots, even sometimes those of trees.

Rhizotrogus solstitialis is a much commoner species at Cambridge, than the large "common cockchafer." It is popularly known here as the "Midsummer dor."

Cambridge.

ALBERT H. WATERS, B.A.

A VISIT TO BELLE-ISLE.

Probably most of your readers are at the present ignorant of the existence of such a place. I say *at present* because I hope that this delightful spot, possessing such numerous and varied natural beauties, will not fail to receive at least a few profitable visits during the ensuing summer by those lovers of nature who read this paper. Belle-isle is situate on banks of L. Erne, exactly opposite the Knockninnny Hotel, which is three miles distant by water. This Hotel, which has been built by my cousin, may be reached from Lisbellaw Station, on the G.N.R., between Dundalk and Londonderry. I shall be very happy to give any further particulars, if applicants will write to me at Branston Rectory, Lincoln. Although I merely stayed there 3 weeks, I captured the following Lepidoptera in plenty:—*P. napii*, *L. degeria*, *H. hyperanthus* (very abundant), hybernated *Atalanta*, *A. paphia* (common everywhere), *L. impura* (crawling up reeds at night), *Z. lonicerae*, *Filipendulae*, also 2 *Trifolii*, *L. rubricollis*, *H. miacea*, *C. cytherea*, *T. pronuba*, *fimbria*, *orbona*, *ianthina*. *A. segentum*, *N. glareosa*, *augur*, *baja*, *C. trapezina*, *difflinis*, *C. graminis*, *Plusia bractea*, *iota*, *pulchrina*, *gamma*, *chrysitis*, *B. rhomboidaria*, *M. margaritata*, a pretty variety of *bilineata*; besides many others which would take too much time and space to mention. Water-fowl swarm on some of the islands and the following I saw in plenty, viz., Gannet, Goosander, Arctic Tern, Crested Grebe, Oyster Catcher, cormorants, gulls, etc. I am only a beginner and would not attempt to name everything I saw, suffice it to say that any entomologist or ornithologist who undertakes a ramble on the mountains or islands in the neighbourhood will find expenses and inconvenience amply repaid. Before I close I must record the capture of *H. dipraca* on the 15th of June in a clover field near Nopton, Lincolnshire. Perhaps some of your readers could give me a hint for finding larvae which ought to be feeding now.—E. PORTER.

THE HUMMING-BIRD HAWK-MOTH.

On June 27th last, I had a specimen of this insect (*M. stellarum*) brought to me from the Stationery Department of the Great Western Railway, Paddington, w. The creature was running along the floor, and had evidently been brought up from the country by means of a hamper. It was given me alive, and was rather worn. A somewhat similar circumstance occurred in the Ticket-printing Department in the case of the small tortoise shell butterfly recorded in the NATURALIST'S JOURNAL, Vol 1. p. 34.—J. F. CORDON.

NOTES FROM OSTEND.

Ostend cannot be said to be flourishing in the entomological way, there being very few insects to be found round about it.

In the fortnight I spent there last summer I saw quantities of *C. edusa*, which I hear were very common everywhere; and there were also in abundance *C. hyale*. I caught only one of the white variety of the female *Edusa*, but that was a very good specimen. The "dunes" or sandhills were swarming with a butterfly like the grayling (*Semele*), only larger, *Cordona* I think was its name. The only moths which were at all plentiful were *Stellatarum* and *Z. jittendulae*. The large green grasshopper (*Phasgonura viridissima*) seemed to be fairly plentiful. I think that is about all I caught near Ostend. At Wiesbaden I caught a good many of some kind of *Erebia*—I should be very pleased if anyone could tell me in the next number of this Journal, what it would most likely be. It is very common on the wooded hills about Wiesbaden. There were also a quantity of a kind of blue, almost exactly like our large blue. I caught *P. machaon* on some marshy ground, but unfortunately one of its tails was a little damaged. I am nearly certain I saw *Antiope* in a garden, but it got up and flew over the house so quickly that I could not be sure.—C.H.S.

NOTES FROM ROYSTON.

In my last notes I mentioned the absence of wasps, but now I quite change my tune, and say I never saw so many, but I give them credit for being less troublesome in the house than usual. The most effectual way to destroy wasps' nests, is to mix one ounce of Cyanide of Potassium in a quart of water, and pour about a quarter of a pint into the mouth of the nest, leave the mouth open, so that the wasps that are out, may return, only to die, if this is done in the morning, the nest may be broken up in the afternoon without any fear of being stung, the nests must be broken up, or the grubs emerge from the comb, and re-establish the colony. August 8th, Seagulls passing south-west, they are the first I have seen leaving their northern breeding grounds. The tree sparrows appear to be getting more common in this locality, within the last few days I have had some beautiful clutches of their eggs, brought in from a place where I had not before known them to breed. The Hawfinch, which has always been a rare bird here, and I have no record of its having ever bred within some miles of this place, has recently been paying us some visits. August 9th, Six quite freshly laid eggs of the Land-rail, were brought in this morning. I never knew this bird to nest so late before. August 12th, Although the weather is moist, and exceedingly hot, 78° in the shade, and just the weather for butterflies, yet they are most conspicuous by their absence, I fail to understand the reason. The sparrows are still breeding, but the broods now are very small, and do not average two and a half young birds; they began nesting earlier than usual, but all through the season the broods have been small. We have had many more of the Spotted Flycatchers than usual, but the Black-

caps (*Sylvia atricapilla*) have been exceedingly scarce, I have not seen a nest.

August 13th, 1893.

RAMBLER.

TO CORRESPONDENTS.

WE TRUST that this number of the *Naturalists' Journal* will give satisfaction to all our readers, the advantage of the increased space being very evident, while the separation of the "Sale and Wanted" and "Exchange" columns from the reading matter is also an improvement that was much needed.

AS SEVERAL READERS, however, will not see their contributions in this issue, we may say that, owing to the number of articles and notes sent in, we have still a number left over, which will appear as early as possible.

WE SHALL be glad to hear from contributors who can favour us with articles for the *Practical Naturalist* column, on any subject which has not yet appeared, as we wish to make this feature of the Journal as complete and useful as possible.

G. J. W., CHELTENHAM.—See Correspondence; article came to hand and shall be inserted next month.

M. B., BELLAGIO.—Your article entitled "Natural History of a voyage to Buenos Ayres," will appear in the October number.

ALL COMMUNICATIONS FOR THE NATURALISTS' JOURNAL should be addressed to the Office; P.O.'s. should be made payable to H. K. Swann, at "Euston Road."

NOTES AND NEWS.

A DRAGON-FLY IN THE CITY.—Mr. W. Nicholson, junr., writes as follows: "Many of your readers will be interested to hear that on July 28th, in the busy thoroughfare of Fleet Street, I caught a large dragon-fly, outside the 'Agent's Journal' office." Mr. Nicholson does not say what kind of dragon-fly it was, but we presume it was a species of *Æshna*; *Æ. grandis* frequently roams far from water, but its occurrence in such an unlooked for place as Fleet Street, is of course quite unusual.

ENTOMOLOGICAL PINS.—As all our readers know, there was a great rise in the prices of the cheaper sizes of Entomological pins at the beginning of the present year. Four of the five "sixpenny" sizes being advanced to 1/-, and No. 5 Kirby—No. 14 Tayler—to 1/6. This size was much used by Entomologists for setting out specimens, and the increased price almost prohibits their use for this purpose. We have received from Mr. Marsden, of Bath, samples of what are called "Long Lills" and "Shanks." The "Lills" are a small pin almost equal to No. 9 of Tayler's, and are very useful for setting, and the "shanks," which are headless pins of wire about the same size length as No. 14, are also excellent for this purpose, as well as for fixing the cards of "carded" specimens.



THE NATURE LOVER,

AND LITERARY REVIEW.

EDITED BY H. DURRANT.



IN this Magazine many will welcome a friend and companion, but none more so than the Nature Lover, who will here find a means of expression and communication such as hardly exists in any already published periodical.

The Magazine aims at traversing in part the field of Nature, pure and simple, and as a companion and not a supplanter of its more exclusively scientific contemporaries. As such we feel sure it will be accepted warmly by that large section of the public which delights in studying and enjoying Nature under her multitudinous aspects. For the Nature Lover, apart from the Naturalist, we cater; but as these two should be identical we have reason to hope that we shall address a wide constituency.

Among the articles to appear during the few earlier numbers, the following will figure:—

THE WORK OF THOMAS HARDY (Appreciative and Critical).

SHAKESPEARE'S FLOWERS.

MONTHLY EXCURSIONS INTO NATURE.

IZAAK WALTON. *With a sketch of his life and character.*

A SERIES OF NATURE CLASSICS; including Gilbert White, Jeffries, Thoreau, &c.

THE POETRY OF THE MONTHS.

SKETCHES OF LIFE AND SCENERY IN THE BLACK COUNTRY.

SKETCHES OF A VOYAGE TO NOVA SCOTIA : I. From the Old to the New. II. The Land of Evangeline. III. Homeward Bound !

TIMBER.

HISTORIC DUDLEY.

SWEET VIOLETS.

ORIGINAL POEMS.

REVIEWS, CORRESPONDENCE, &c.

For the benefit of the literary aspirant there will be a corner devoted to literary competitions with prizes, of which particulars will be given in No. I.

The "Nature Lover" will be published quarterly. No. I will be ready SEPTEMBER 25th, 1893, price ONE SHILLING. The Magazine will be printed in the best style on finest toned paper, and will be delivered on the day after publication for an annual subscription of FOUR SHILLINGS, which should be prepaid. Single copies price 1s. 1d. post free.

All enquiries of a business nature, subscriptions, &c., should be addressed to

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Boulton Road, West Bromwich, Staffs.

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NATURAL HISTORY HANDBOOKS.—Comprising, Collecting and Preserving Birds, Birds' Eggs and Nests, Dragonflies, Land and Freshwater Shells, Flowering Plants and Ferns, Freshwater Algae, &c., by popular writers; price 2d each, postage $\frac{1}{2}$ d extra.—Office of the NATURALISTS' JOURNAL.

LABEL LISTS.—For British Bird's Eggs (gummed), Butterflies, Land and Freshwater Shells, $\frac{1}{2}$ d each, postage $\frac{1}{2}$ d extra. For Dragonflies, Marine Shells (No. 1, bivalves—No. 2, univalves), Stalk-eyed Crustaceans, Echinoderms, Macro-lepidoptera, 2 $\frac{1}{2}$ d each, postage $\frac{1}{2}$ d extra. Data blanks, 4 $\frac{1}{2}$ d per 100, post free.—Office of the NATURALISTS' JOURNAL, 369, Euston Road, London, N.W.

EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

INSECTS.—Including many *Euphaedra*, *Charaxes*, *A. audæmonia*, *Harpax ocellaria*, ant-lion larvae, &c., and land shells—*Achatina* and *Sabalina*—collected in Sierra Leone. Will exchange for European and exotic Lepidoptera, especially *Charaxes*, and Coleoptera.—W. G. Clements, Frindsbury, Rochester.

RHIND'S "Miscellany of Natural History," 35 hand coloured plates, as new, cost 6/6; Jardine's Naturalist's Library, 50 volumes, separated, will send list, and other books. Exchange: United States Stamps, old or Columbian Issues.—George Davis, 33, Brighton Terrace, Brixton, London, S.W.

RARE BOOKS. Exchange, Setting Boards, anything, Wonders of the Microscope, Mavor's Natural History, Stuttard's Butterflies, Buffon's Natural History, Wood's Natural History, Mrs. Lee's Taxidermist, etc., list sent. Want other books.—W. Nicholson, 38, Brighton Terrace, Brixton, London, S.W.

THE FEATHERED WORLD, from No. 14 to No. 157 (No. 28 missing). Exchange for Natural History specimens.—E. A. Kemp, Earle Street, Yeovil, Somerset.

OFFERED.—A large collection of Periodicals and Papers. "Answers" 131-271, "Tit-Bits" (containing "A Study in Scarlet,") "Strand Magazines," "Peterson's Weeklies" and two or three hundred odd numbers of all sorts. Also "Field Club," 1890, unbound, and "Entomologist," 1890, bound. Wanted: Howard Saunders' "Manual of British Birds," and other Natural History books or specimens.—E. F. Atkins, Clifton Villa, Andover, Hants.

DUPLICATES.—*L. alsus*, *Sibylla*, *Edusa*, *Lucina*, *Urticæ*, *Adippe*, *Io*, *Brassicæ*, *Caja*, and *Grossulariata*. Wanted: British dragonflies, grasshoppers, crickets, cockroaches, and earwigs (especially mole and field crickets), also ova and larvæ of British bombyces and sphinges.—W. Harcourt Bath, 195, Ladywood Road, Birmingham.

DUPLICATES.—Many species of British dragonflies, also a fine collection of foreign dragonflies, principally from North America, South Africa, and Japan, as well as a small collection of foreign butterflies and moths. Desiderata as above or offers.—W. Harcourt Bath, 195, Ladywood Road Birmingham.

FOR DISPOSAL, a small nest of six drawers, each measuring 12 by 16 inches, suitable for birds' eggs, shells, or minerals, etc., full particulars on receipt of stamp. Wanted same as above or offers.—W. Harcourt Bath, 195, Ladywood Road, Birmingham.

WANTED.—The field naturalist's handbook, by Rev. J. G. Wood and Theodore Wood. Offered: British birds eggs and nests, by Rev. J. C. Atkinson, with 12 coloured plates.—A. B., 3, Islip street, Kentish Town, London, N.W.

 When answering advertisements or writing for catalogues, please mention THIS magazine.

The Practical Naturalist's Society.

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A catalogue of the books in the Circulating Library is contemplated, but the Secretary is anxious to add a few more to the list first. Will Members and Associates please push the Society a little among their naturalist friends ? We want to do many things, which the low state of the Society's Funds prevents us doing now, e.g., print a List of Members, add some good standard works to the Library, such as many young or working men naturalists cannot afford to buy, and offer Prizes for Essays, etc.

Any boy or young lady naturalist will be welcomed into our ranks as an Associate. Also we shall be glad to have more working men naturalists among us, and both those and young beginners requiring help in their studies, will have it readily afforded by the Secretary.

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With the assistance of ALBERT H. WATERS, B.A., M.C.S., &c., and A. FORD.

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COMMON SENSITIVE FLOWERS.

By G. H. BRYAN, M.A.



Leaf of the Sensitive Plant (*Mimosa pudica*).

MOST people have seen or heard of the Sensitive Plant (*Mimosa pudica*), the Venus's Fly Trap (*Dionaea muscipula*), and the Telegraph Plant (*Desmodium gyrans*). But while these are only to be met with in hot-houses in this country, there are many very common British wild and garden flowers, which, when touched, exhibit sensitive properties hardly less interesting, although generally on rather a smaller scale. These are far less widely known than they deserve to be, and as some of these plants are to be found almost everywhere, it is easy for all to examine them for themselves.

In the common Barberry (*Berberis vulgaris*), and other plants of the same genus, the sensitive properties are to be found in the stamens. If we take a well opened flower, the stamens will be seen to rest closely against the petals, but on touching the base of one of them with the point of a pin, it will spring forward with great rapidity and rest against the pistil, at the same time discharging the pollen.

If several stamens are touched simultaneously, these will of course all fly towards the pistil, but those which have not been touched will remain stationary. The common Barberry is found in hedgerows; the ash-leaved Barberry of our gardens is furnished with similarly sensitive stamens. The pretty little Rock-rose or yellow Cistus (*Helianthemum vulgare*) affords another example in point. It occurs in dry pastures and on chalky banks, and at first sight the flower is not unlike that of the common roadside Potentilla, but the plant is readily distinguished by its woody growth and smallish oval leaves, more or less hoary on the under side. The flowers only open in sunshine, so that a sunny day is necessary for showing their sensitive properties.

In this case the stamens, which are very numerous, move exactly in the opposite way to what they do in the Barberry. When the flower is open the stamens are crowded pretty closely round the pistil, but on touching them near the base they will bend outwards till they lie down on the petals; and there is this further difference that they move slowly instead of quickly.

The movement however is well marked, and, as in the Barberry is confined to those stamens which have been touched. It may be well shown by pinching the stamens between the fingers.

The stamens of many composite plants of the Thistle tribe are also sensitive, and among these the large dark purple-red flowers of the Knap-weeds, (*Centaurea nigra* and *C. scabiosa*) so common on banks and in hedges, exhibit this effect very well. Now in all Compositæ the stamens are united together by their anthers into a ring; a property which led the great Linnæus to classify them in a separate class, by the name of "Syngenesia." This coherence effectually prevents the stamens from bending inwards or outwards, so that their only possible alternative is together to move up or down, and this is just what they do. As soon as any of the stamens in one of the florets have been touched the anthers are drawn down towards the base of the pistil and the style remains fixed, thus the pollen is pushed out in little masses. I have just tried the same experiment with a flower of "Sweet Sultan," a garden annual nearly allied to the Knap-weeds and in this also the downward movement of the anthers and the protraction of the pollen were well shown.

The wall Pellitory (*Parietaria officinalis*) is a small branching herb of the Nettle tribe. It has oblong downy leaves with entire margins, and insignificant whitish green sessile flowers in clusters

on the stem. Its habitat is generally on old walls and it may be found in such positions nearly everywhere. Old ruins are always a most favorite locality. The male flowers have four stamens which are at first comfortably tucked up under the lobes of the calyx or "perianth." On lifting these stamens slightly with a pin, the elasticity of the filaments will cause them to straighten suddenly, and at the same time the anthers will burst and scatter the pollen so that the flower reminds one of a miniature "jack-in-the-box." Failing the pellitory the common stinging nettles (*Urticas urens* and *dioica*)—not the dead nettle (*Lamium album*) with its noticeable white flowers—will show the same effect; a male flower being necessarily chosen. In these three plants, however, the stamens do not return afterwards to their original position as they do in the Barberry, Rock-rose, and Knapweed, but the expansion is due to simple elasticity rather than to actual automatic movement of the filaments.

In many kinds of Musk (*Mimulus*) found in gardens, the stigma is sensitive. It forms two lips or lobes, which are generally open, but these close on being touched, and in this way secure possession of any pollen grains that fall on them. One species of *Mimulus* (*M. luteus*) has become wild on the sides of many streams in England, but these seem to have sometimes lost their sensitiveness, as I lately found the case with some specimens from a large pond in Studley Park.

Then again there are many plants such as the Balsams, and the common Broom (*Sarothamnus scoparius*) in which the elasticity of the seed-pods serves to project the seeds to a considerable distance. The carnivorous propensities of the sundews and butterworts are a study in themselves, but to these Darwin's book has called the attention of all lovers of nature. The same author has also dealt with the sensitive properties of tendrils so fully, that any other mention of them would be out of place.

Still there are innumerable other curiosities in the vegetable kingdom generally overlooked, although under our very eyes, and a small amount of observation given to some of our most common weeds, will find an ample reward in the many beauties of nature that will be revealed.

NATURAL HISTORY OF A VOYAGE TO BUENOS AYRES.

By M. BURR.

ON February 21st, 1891, I sailed in the S.S. "Wordsworth" from Southampton for Buenos Ayres.

This was my first voyage abroad and having plenty of spare time I took copious notes on the Natural History of the voyage.

In the Bay of Biscay we were followed by several terns, but I am not sure what species they belonged to. We also passed any amount of porpoises. When we were off the cost of Portugal a yellow-browed warbler settled on the ship. It was the first specimen of *Phylloscopus superciliosus* I had ever seen, and it was an unusual place for it, being out of sight of land. I also saw it again on the following day and since I failed to catch it alive I scattered about some biscuit crumbs in hopes that it might find them a substitute for its natural food. Whether it safely reached Madeira, where we arrived next day, or was drowned in the sea, I cannot tell.

On February 26th, the day after we left Madeira, I saw the first flying fish and first "Portuguese Men of War." Some sharks were seen just as we passed the Cape Verd Islands, but beyond that nothing more of interest happened until March 11th, the day before we reached Rio de Janeiro, when we saw some more porpoises and some individuals of *Larus Marinus*. We entered Rio Harbour about five o'clock on the morning of March 12th. We could see in the harbour several Frigate Birds, "Marlinspikes" as the sailors call them, and some kind of Buzzard.

We landed and drove up to the neighbouring mountain, Tijuca. Armed with a net I caught several butterflies and moths, including *Lycæna batica*, or some butterfly very much resembling it. Several Lizards, species I was not acquainted with were seen and some fresh-water crabs. The next day we went over an island in the Bay and caught several butterflies, which I did not know the names of. In the evening we sailed for Monte Video. On the way occasionally a few gulls were seen and once a bird which the sailors call "Booby" settled on board, but we could not catch it.

Directly we got into the river we were met by some doves. We also saw several species of gulls and some "Cape Hens," a kind of Albatross I believe.

We did a little fishing and caught some cat-fish and a species like them only larger called "armado." They both have the power of raising two of their fins with great force, so great that one struck right through the sole of an india-rubber boot, into the foot of a person who trod on one by mistake. We also caught some "Dorados," a kind of Carp, like a Gold-fish. They gave excellent sport and were fair eating. They grow to a large size, and have very powerful jaws. One "Surair," was also caught. It is a species of cat-fish. All except its most hideous head, was very beautiful, being spotted with dark green spots; it was about four feet long.

Being in Quarantine we could not go ashore, and were anchored in mid-river, fourteen miles from the nearest land. For about two days a

cloud of Butterflies flew across. I caught over fifty in one afternoon. I also caught one or two other sorts including a kind of skipper and one coloured just like a male *Pieris brassicæ*, but it was only about as big as *Cænonympha pamphilus*.

After stopping thus about three weeks we sailed home in quarantine. We passed Lobos Island, inhabited only by seals, and nothing more was seen until we reached the Cape Verds again. There we saw a kind of whale, with the head shaped like that of the sperm whale, but I do not know for certain what it was and it was a long way off. We saw several porpoises, and in the Bay of Biscay we saw three *Alauda arvensis*, a welcome sight. We reached Southampton again on May 1st.

RARÆ AVES

THAT HAVE PASSED THROUGH THE HANDS OF
T. WHITE & SON.

I DO not intend to give a full account of the birds in these notes but simply what have been met with during our forty-nine years experience. I will commence with the eagles, which birds have always been rare in Gloucestershire. The golden eagle has been killed on White's Hill, near Painswick, and preserved by us; we have also had two which were killed in Scotland, and can be seen at Tibberton Court, Glos.; one from Wales preserved for Mr. Conwell Rogers, and another killed in Wales and presented to us by Mr. Adams, late of 12, Suffolk Square, Cheltenham. Passing to the spotted eagle, we had a fine specimen to preserve which was killed at Rendcomb, near Cirencester.

A very fine gyrfalcon, killed by Mr. La Terrier in Ireland, has come to us; we have also had several ospreys, some from Ireland, two killed within three miles of Cheltenham, and one killed by Mr. Holmes, near Cleave. The peregrine falcon has been rather common in Gloucestershire; we have had dozens in our time, nine birds having been killed within a few miles of each other. Some thirty-five years ago kites were very common in this county; we had several that were killed at Rendcomb, by Mr. Ellis, and which were feeding on a dead sheep, also two killed on Kite's nest Farm, near White's Hill, which had come there to nest, they were the Black-winged Kites.* A pair of common, or fork-tailed kites built their nest in a large tree on Agg Hill and it was taken by my father; Mr. Greenaway, who was with him, shot one of

* *Elanus cæruleus*?—This little kite is not admitted to the British list by recent authorities. Perhaps Mr. White can furnish further particulars?—ED.

the birds. We also had a black-winged one brought to us alive that had been winged and caught at Sandford, Cheltenham, and also one killed at Sherborn and preserved for Mr. Plun, of Northleach. We had a grand specimen of the swallow-tailed kite alive which we sold to Morris Montague Esq., of Birmingham. Coming to the buzzards, we have had three rough-legged buzzards, two killed in Earl Bathurst's park, Cirencester, and one at Sydney, Glos. We have had many honey buzzards from Coleford, for four years we had one each year; also one from Birdlip, two from Farmington, four from Wiltshire, and three from Wales. The common buzzard has been very numerous, we having had a great many, killed in all parts of the county. Goshawks have been far from common in Gloucestershire, we have only had four, two killed in Earl Bathurst's park, Cirencester, by the keepers, one near Greenock, and one at Farmington, by a keeper.

As regards the harriers, we have received one marsh harrier that was killed in the Ham at Gloucester, one from Charlton Park, near Cheltenham, several from Ireland, and one from Wales. Of hen harriers, one was killed by Mr. Barnett, of Stroud, some years ago, and another in Charlton Park, near Cheltenham; we have also had several from Ireland and Scotland; about eighteen in all, but only three were males. Montagu's harrier we have found to be scarce and have only had three, one killed just below Gloucester, one from Northleach, and one out of Wiltshire. The orange-legged hobby we find the rarest of all the hawks with us. We have only had one, a very fine specimen, killed by Mr. Kitten, steward to—Elwis, esq., Coulesborn Park, Glos. The common hobby we have received a great number of, also merlins, kestrels, and sparrow-hawks.

Cheltenham.

G. J. WHITE.

(*To be continued.*)

THE PRACTICAL NATURALIST. SPIDERS: THEIR COLLECTION & PRESERVATION.

By H. DURRANT.

It is undeniable that spiders do really give one a creepy feeling, especially some of the Theridiidæ and Epeiridæ, and so I warn any reader of the fair sex who may be lurking hereabouts to take her departure, for we are going to talk about all sorts of dreadful things connected with them.

Speaking to my more rational * congregation I should like to

* This is rather hard! Mr. Durrant will get himself disliked if he makes such remarks.—EDITOR.

express myself strongly and in good set terms anent the scarcity of the students of the Arachnida group. It is not too much to say, however, being denied the pleasure of such a proceeding by a vigorous editor, that comparatively not one in a couple of hundred designating themselves naturalists know even the slightest rudiments of Spiderology. Perhaps this is due to the repelling qualities of the creature, but certainly this is no valid excuse, with one calling himself a naturalist. Spiders should have no fear for him. Perhaps again the excuse is owing to a fancied difficulty in the preparation of specimens for the cabinet and because—yes, we must say it—because then they are not *pretty* like butterflies and eggs. That touches a good many I fancy. Never mind don't be too hard on me and I will see if I can rouse an interest in you, then you will study mayhap all about them this winter (more than I could hope to tell you) from other books, and next year perhaps you will take the field. The total number of species as yet found in England does not exceed four hundred, but these will provide plenty of work for a diligent student, if he can conquer his dislike and come to make friends with them in a tolerant sort of way.

Spiders it must here be explained (for the belief is still prevalent) are not insects, they form the order *Araneidea* of the class *Arachnida*. Their position is somewhere between the *Insecta* and *Crustacea* and their classification is based upon the number of their eyes. *Octonoculina*—eight eyes. *Senoculina*—six eyes. *Binoculina*—two eyes. The latter goes unrepresented in England, so the student will only have two large groups to fasten his attention on. It will be comparatively easy for him to pronounce which group his specimens belong to,—and why? If they don't belong to *Octonoculina* they will to *Senoculina* if not to *Senoculina* to *Octonoculina*. The chances will be mostly on the latter, it being the better represented in our country. I will leave the anatomy till another time and content myself now with mentioning that spiders in contra-distinction to Insects are possessed of a respiratory apparatus—*pulmobranchia*—that is, organs having the function of both lungs and gills, and that they are oviparous, one impregnation of the female, sufficing to produce several batches of eggs.

Habitats. The places selected by spiders for their abode, are numerous. Thus the *Lycosidæ* or Wolfspiders roam about after the fashion of wolves, and catch their prey by sheer dexterity. The *Epeiridæ* or Geometrical spiders so familiar to all, construct a beautiful web and seldom leave its vicinity. The *Salticidæ* or Leaping spiders construct no web but roam about like the wolf spiders, capturing their prey by a sudden leap, whence their name. They will jump in a similar manner when alarmed. The *Thomisidæ* or Crab-spiders conceal themselves in cracks of trees, rocks, walls, &c., or support themselves amongst herbage.

Their legs are jointed in such a manner, that they can progress backwards, forwards, or sideways like a crab. One species, *Philodromus fallax*, is remarkable for its close similarity in colour to the yellow sand of the sea-shore, which place it inhabits ; but it is rather rare and the young collector will not meet with it at first. The *Drassidæ* construct cells made of silk spun by themselves. These cells are to be found in the trunk of trees, crevices of walls, rocks, and under stones, &c. Very often they will fasten a leaf together by threads of silk, and use it as a habitation. The *Ciniflonidæ* are found amongst foliage, under bark, in rocks, walls, &c.

It is useless to give, or try to give a complete list of localities, they are so various, and every day would add fresh and novel ones to the list. Mr. Jesse records an instance of a spider—or rather two—constructing a couple of webs in the opposite corners of a drawer and living there joyous and contented for a period extending upwards of *thirteen years* !

Look for them, however, in cellars, houses, gardens, sheds, crevices of bark, walls, rocks, &c., under stones, fallen leaves, &c. In fact, look everywhere for them, the same as one does for insects and other natural history specimens, remembering while doing so that “one never knows” and likewise, “one can never be *too* careful.” These should be the naturalist’s guiding aphorisms.

A sweeping net will come in handy for manipulating amongst low herbage, and will also serve to gather the water spider *Argyroneta aquatica*. This is found in most pools, and is interesting to confine within the precincts of an aquarium as it constructs its web below water and buoys it up by taking down underneath it bubbles of air by means of its hairy body. (No joke intended.)

If the reader is an Entomologist he will be provided with all necessaries for collecting spiders. The requisites are few :—a sweeping net, to sweep plants, by which means a large number may be quickly obtained and can be picked over at leisure, and an umbrella to beat into, many species being found in the trees. To this paraphernalia add some chip boxes, preferably with glass tops. These enable the animal to be examined alive, its movements, and idiosyncrasies noted and commented upon, etc. In the field the arachnologist must keep his eyes open and possess a nimble pair of hands. Spider catching is not the easiest thing in the world as the collector will find out. Some will fall off the plant and tree and feign dead among the rubbish at the bottom, while others will depend on their legs and make off at a rate calculated to bother the man with a chip box in his hand, and an eager look on his face. Various species belonging to various families have different methods of escaping and the student should note particularly how he missed his spider—or rather how the spider missed him.

When you reach home with your *arachnida* at the close of a good days' collection and *observation*, the specimens should be killed at once, for many of the species soon die and shrivel up in captivity, and indeed the arid desolateness of a chip box is not conducive to the prolongation of life. They are to be killed then, and in the prosecution of our fell design we may use boiling water or spirits. These are the two most favourable methods and both are satisfactory and give no cause to look around for others with more recommendations.

If they are killed in water, they must be taken out and placed in weak spirits afterwards; weak whisky or rum will do. In this they must be left for a few days to become thoroughly impregnated, after which, they can be taken out and placed in small tubes filled with colourless whiskey, corked and sealed, and the name attached. A preferable plan is to mount each one on a slip of card with gum (not a spirit one) and write on the same card the name of the attached spider. This can then be immersed altogether in a tube filled with whiskey, corked and thoroughly sealed as before. Different sized tubes will be required as the spiders of the various genera, vary in their proportions. It should be so arranged in purchasing that the tubes will be multiples of each other; this will enable an economization of room and general neatness of the cabinet, or whatever is used. The tubes may be stored in racked trays, so that a glance will comprehend a whole genus, or they may be kept in a perpendicular position, like pipes in a rack. If properly sealed, I advocate the former method, it having the greater educational advantages, besides presenting a greater attraction to "outsiders" who are being shown over the "insecks."

Instead of spirits some recommend turpentine; not having consistently used this I cannot speak upon its merits or demerits, but specimens preserved in the afore mentioned manner will keep colour and rotundity for years. I accidentally stumbled across a rather novel method of preserving spiders some time ago. I happened to set fire to a large *Argyroneta* which was thoroughly saturated with spirits. Instead of the specimen being irrecoverably spoilt, it was bettered. It had been doubled up in the tube, its legs I mean, and had permanently become rigid in that position. On being set fire to the legs were protruded into a natural position without being in the least burnt; I blew the flame out, and the result was the most natural spider I had in my cabinet. I tried it again, but it is rather too risky to be recommended, especially to tyros, who always get rare specimens. Its a way they have.

In conclusion, I take the opportunity of stating emphatically, that a journal should be kept for record, and every little observation, however simple it may appear at the time, be recorded in its proper place, you will no doubt be surprised sometime to see what light such records throw on questions seemingly unanswerable

and shrouded in mystery.

Finally as to books: the best *cheap* book on spiders and one that can be well recommended is Staveley's British Spiders, (Lovell, Reeve, London). It has about one hundred coloured figures, and is published at 10/6. The coloured figures are very accurate, as is the text, the latter being interspersed with numerous woodcuts and diagrams. This book will answer all the collector's requirements for some time to come. If he is *very* enthusiastic over his spiderology, he can obtain later "Blackwall's Spiders of Great Britain and Ireland" (Royal Society 1861-1864.) The book however being very expensive will not fall to the possession of every spider critic. Many libraries though, will be found to have it in the Reference Department, stowed up in some musty corner like its namesakes.

THE BIRDS OF CAMBRIDGESHIRE.

By ALBERT H. WATERS, B.A.

(Continued from page 15.)

THE next bird on our list is the familiar Redbreast (*Erythaca rubecula*), known here generally as the Robin. As is universally the case, it exhibits a great fondness for human society and with a little encouragement soon makes itself thoroughly at home and becomes a semi-domesticated member of the household to which it attaches itself, even going the length of building its nest in an apartment of the house, as was the case with a pair of whose nidificatory exploits in this way I heard a day or two ago. Were I reckless of space I might fill several pages with some instances of curious sites for its nest, but am compelled to refrain. The eggs I have seen here have been mostly freckled and spotted with yellowish red on a greyish ground, but I have found them vary in the number of freckles and intensity of tint. Some have dark red freckles and spots on a very pale reddish white ground.

The Redstart (*Phoenicura succica*) is one of our summer visitors, arriving here early in April and leaving us in September. It nests in the county and often close to houses, or even upon them, under the eaves, and is sometimes very eccentric in the choice of a site for nidification. I have not seen any particular variation in the colouration of its well-known greenish-blue eggs. The Black Redstart, (*Phoenicura titys*) is very rare here.

The Stonechat (*Saxicola rubicola*) is commonest in the part of Cambridgeshire bordering on Suffolk. The eggs vary in the depth of ground colour, some being greenish blue, others a decided green, now and then a very faint green, occasionally grey,

and they have occurred white or nearly so. In all the varieties a greater or less number of minute red spots are sprinkled over the shell.

The Whinchat (*Saxicola rubetra*) is known in Cambridgeshire as the Grasschat. It is a summer visitor, arriving in April and leaving in September. The nest in this county is usually made among rough grass and very carefully concealed. The eggs are bluish green and generally unmarked, but some have minute reddish brown spots. Some are paler than others and they have occasionally, but very rarely, been found so closely spotted as to appear a dull reddish brown.

The Wheatear (*Saxicola oenanthe*) occasionally visits us, but I have never found its nest, and the same remark applies to the Grasshopper Warbler.

Savis Warbler (*Locustella naevia*) was formerly found nesting in Cambridgeshire. The Sedge Warbler (*Sylvia phragmitis*) is one of our summer visitants. It makes its appearance here about the third week in April. It is very retiring in its ways, and hides in bushes or osiers near the rivers, and glides rapidly out of sight; a stealthy approach is therefore necessary before it can be seen fairly. The nest is made in a low thick bush by the river side, constructed of very fine grass and horsehair and bulky in size. The eggs are greenish, sometimes ochreous white, finely freckled with light brown, and with a few dark hair-like streaks at the larger end.

The Reed Warbler (*Acrocephalus streperus*) is rare in Cambridgeshire, but I saw a pair of reddish brown birds, yellowish white underneath and pale breasts, near Ely, in the summer of the present year, and they appeared to me to be reed warblers. I could not discover a nest, although I looked about as carefully as possible among the reeds.

(*To be continued.*)

THE SKIN.

AN elaborately prepared and most instructive lecture on the above subject was delivered, by Mr. H. C. Richter, before the Lambeth Field Club, on the evening of September 4th. The lecture was illustrated by a series of coloured diagrams executed by the lecturer himself, who thus combined science and art in a most effective manner.

The lecturer commenced by explaining the structure and functions of the skin in the lower animals, rising from the primitive protoplasmic infusorian, through the hard-shelled and often spiny Echinoderm, the chitine-cased insect, and the soft-bodied

mollusc, with its mantle-secreted shell, to the Vertebrate classes, in which scales were commonly found among the fishes and reptiles, a soft unprotected skin among the Amphibia, feathers among birds, and true hairs among mammals, the last two forms of skin-appendages being characteristic of each of the two classes respectively. The feathers of birds were of two kinds, the soft downy feathers of the body and the hard and stiff wing and tail-feathers, which, by offering resistance to the air, enabled the bird to fly. Not only this, but the barbs of the wing feathers locked into one another and formed a still stronger resisting medium when the bird gave a stroke with its wing in flight. Among the mammals, the pangolins and armadillos offered curious modifications of the skin appendages, being covered with a hard scaly armour which very effectually protected them from their enemies. The spines of the porcupine served the same purpose in another way. The prolongation of the skin into flying membranes was seen in the bats and flying squirrels. The horn or the rhinoceros was, as shewn by the microscope, made up of agglutinated hairs. Woman's hair, in the lecturer's opinion, was the most wonderful, and cases of its reaching over six feet long were given. The human skin then received attention. The true skin, or cuticle, was the sensitive one, and lay beneath an outer covering, the epidermis or "scarf-skin," which was an extravasation of the true skin, and entirely destitute of nerves and blood vessels. These two layers were again divided into several more complicated ones, according to the form of the cells of which they were composed. Numerous tiny projections, or papillæ, were found in sensitive parts, especially the soles of the feet and the palms of the hands, and had a special grouping of the nerves running into them, forming a "plexus." To illustrate this the audience were treated to a view of a portion of the lecturer's own thumb, seen under a high power of the microscope. The formation of the skin, as known by the researches of a German, was as follows:—From the blood (*liquor sanguinis*) was thrown out a lymph, in which certain bodies named "cytoblasts" were developed; these rapidly grew by feeding on the lymph, and became spherical cells, pressing on one another and ultimately forming a layer. Other layers formed beneath, and the older cells were thrown off, and this process continued all through life. Going on to hairs, the lecturer showed that they were not as popularly supposed hollow tubes, but that their interior was filled up with the medulla or pith. They were lubricated by an oily fluid, secreted by the sebaceous glands, which were so situated that they poured their contents on the outside of each hair.

Mange in dogs was caused by a tiny Arachnidan, the same as the parasite living in little pimples on the skin of the human subject, as had been proved by experiment; the name of this animal was *Demodex folliculorum*. Some very beautiful insect

scales were next shown on the board, one form, from an Australian skipper butterfly, having been first described by the lecturer himself. Finally, the microscopic examination of hairs was touched on. They should first be viewed as opaque objects, so that external markings might be observed, and then mounted in Canada balsam to show their internal structure. But most beautiful of all was a hair viewed by polarised light, when the display of prismatic hues presented to the eye was indescribably lovely. This was especially the case with white horsehair, an exceedingly clever painting of which, when viewed as just described, concluded the series of diagrams exhibited.

The next lecture will be delivered at the Club's Rooms, St. Mary Newington Schools, Newington Butts, S.E., on October 2nd, at eight p.m., the subject being, "A Talk about Toadstools," and the lecturer, Mr. Edward Step, who will exhibit his beautiful photographs of edible and poisonous fungi by means of the lantern.

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*)

NOTES FROM ROYSTON

August 18th, A day to be remembered, 87° in the shade. From noon on the 17th, to noon on the 18th, will probably prove to be the hottest twenty-four hours on record. August 21st, A slow worm (*Anguis fragilis*) with six young ones were brought to me. I believe they derive the name *Anguis fragilis* from their becoming so rigid and brittle, when alarmed, that their tails may be broken like a piece of glass. The young ones very much resemble small eels. August 20th, The swifts took their departure to-day. August 28th, Exceedingly bright Mock Suns this afternoon from 5.30 to 6.30, they were followed by two beautiful warm days. August 30th, A great snipe (*Gallinago major*) was shot near here. It is the first I have ever known killed in this locality. Sept. 1st, Fine day for shooting, the birds are strong and well grown, which is more than can be said of the turnips and other green crops. Land rails appear to be plentiful, but Quail, have not been seen in any numbers. Sept. 2nd, Short eared owls (*Asio brachyotus*) arrived. Sept. 4th, Dotterel (*Eudromias morinellus*) used at one time to be constant visitors to this locality but of late years they have become quite rare birds, however four were killed near here to-day. Sept. 9th, I picked some ripe strawberries, out of doors, this morning. The modern way of cutting corn by machine is

responsible for a great deal of unavoidable injury to the beasts of the field. I found two hares this morning both of which had lost a leg, however they could go well. I examined the stumps which appeared to be cut off flat by the sharp blade of the machine. A curious accident happened to a leveret, it jumped on to the platform of a self-binding machine and was tied up alive in a sheaf of wheat. The Humming-bird Hawk moths (*Macroglossa Stellatarum*) have been tolerably plentiful the past few days, but in the early part of the season I did not see one.

Sept. 14th 1893

RAMBLER.

DRAGON-FLIES IN THE CITY.

Mr. Nicholson records the appearance of a dragon-fly in Fleet Street in the September number of the "Naturalists' Journal." Last year there was a great commotion in the newspapers about the same insect. Whether there were several or not I do not know, but I personally encountered one in Bolt Court at that time, and though I did not catch it I have little doubt that it was an *Æschna*. My theory is that the larvæ inhabit the fountain basin in the Temple Gardens, where they would be able to subsist on the flies, etc., that fall into the water; or they may perhaps come from the larvæ kept at aquarium dealers. F. P. P.

THE HOUSE SPARROW. (*Passer Domesticus*)

This is one of our native birds which is under-going a change in the increase of numbers and area of distribution. This has created a good deal of anxiety on account of their destructive habits to cultivated crops of the field and garden. Where the climate is sufficiently genial for them the numerical increase has been, we may say, phenomenal. In this part, where the climate is rather uncongenial for them, the increase is very limited, but the more remarkable point is the change of habits so as to exist under the altered conditions: chiefly in connection with taking to trees for nesting and shelter necessitated by the practical extinction of thatched houses which formerly used to afford their nesting place. In fact a new variety may be said to have taken the place of the old who do not clamour after head quarters to any marked degree on the eaves of houses, like their predecessors, but are hardier and fall to trees in the vicinity of houses. I have not yet seen a case of nesting away from the vicinity of houses here, although I have been on the outlook for this. They are pugnacious in their habits and ready to contend on their own limited area with any of the other small birds which may come under their immediate surroundings. The less offensive Hedge Sparrow seems inclined to move away from old haunts when these birds come upon the scene, although the former do not altogether evade the society of the latter. Their habits in search of food here are

similarly destructive to parts where they are more numerous, but the climate prevents increase in numbers sufficient to materially affect crops or make it difficult to keep them in reasonable numbers.

Alford, Aberdeen,

W.M. WILSON.

CATS AND DOGS.

At Chapel-cum-Mumby, Lincs., a farmers wife had two kittens given to her. As they were delivered unexpectedly, they were put in a box near a dog kennel in which a large dog and her pup were living. They were left some time and when next seen the kittens and the pup were being suckled by the bitch. In form, colour, and size the kittens and pup were as much unlike each other as possible, and yet all three youngsters were reared by the same mother. At Hogsthorpe, Lincs., an old lady has a cat which will "shake hands" with either "right" or "left" paw (as requested) and can open any door in the house, by hanging on the handle with one paw, and lifting the latch with the other, the door fasteners being the old fashioned "snecks."

FRANK ALTOFT.

TO CORRESPONDENTS.

WE ARE pleased to say that our announcement as to the answering of Queries (see "Notices,") is evidently appreciated by our readers; but we must ask correspondents to write the queries relating to each different branch of Natural History upon a separate piece of paper, and enclose a separate stamped envelope for same.

H. H., PENGE.—The term "Odonata" is derived from the Greek *odontos*, a tooth.

F. A., HOGSTHORPE.—We shall probably be able to give an article on "Wasps" later on, with illustrations; we have too much other matter on hand just now.

W. G. C., THETFORD.—Thanks for your letter; no doubt the greater part of our readers agree with your remark that this magazine is "now by far the most interesting journal of its kind, especially to young or working men naturalists."

B. R. H., HIGHGATE.—Shall appear next month.

CANVEY ISLAND (reply to DOSH).—Canvey Island, in the Thames, yields but little of interest to the oölogist. The peewit or lapwing breeds abundantly on the island, and the redshank's nest is often met with in the breeding season. The greenfinch nests in large numbers in the hedges. In *severe* weather the island contains many rare birds, but at other times it is rarely anything out of the common is seen. Canvey Island is noted for its hares which give good account of themselves at coursing times.—A. F. GATES.

BOOK NOTES.

On the 25th of September, No. 1 of "The Nature Lover" will see the light, and we have every reason to believe that a successful career is before the new quarterly, for such the magazine will be. The title perhaps sufficiently indicates the nature of the magazine, and it will be edited by our esteemed contributor, Mr. H. Durrant, whose name is familiar to every reader of this magazine. Particular attention will be paid to reviews of kindred literature, while a series of Nature Classics, will also be given, including Gilbert White, Jefferies, Thoreau, &c. The Contents of No. 1 will be as follows :—"Izaak Walton"; "Sketches of a voyage to Nova Scotia," No. 1, "From the Old to the New"; "In a Fir Wood"; "Sweet Violets"; Shakespeare's Wild Flowers"; "Grace as distinguished in trees"; "Timber"; "To the Nightingale" [poem]; Reviews, Correspondence, etc. There will also be a corner devoted to literary competitions, with prizes, of which particulars will be given. The price of the magazine will be 1/-, and we advise all our readers to order a copy of No. 1 from their bookseller or news-agent without delay.—at the same time mentioning the Publisher, viz.—Elliott Stock, 62, Paternoster Row, London, E.C. or by sending a postal order for 4/-, to the office of this Journal, 369, Euston Road, London, N.W., they can have the magazine sent post free for one year. Single copies, 1/1, post free.

NOTES AND NEWS.

THE COLOURS OF FLOWERS.—A Canadian naturalist, Mr. A. I. Drummond, has been investigating the colours of flowers, in relation to the time of flowering, and has contributed a paper on the subject to a recent number of the "Canadian Record of Science." He finds that April, May, and even June and July, are remarkable for the prevalence of white flowers, July and especially August, of yellow, and September and October of purple and blue.

MUNCHAUSENISM does not seem to have quite died out yet, judging by the following cutting which has been going the round of the papers lately :—"Condors have been killed in Peru with wings of 40 feet spread." No one but a newspaper correspondent could have measured the wings of those condors!

EARTHWORMS AND CONTAGION.—One of the questions treated by the Tuberculosis Congress has been the obligatory cremation of the remains of consumptives. Earthworms, it was urged, bring to the surface the bacilli which infest the dead body, and in dry weather they may be inhaled in the form of dust. This is perhaps why the health resorts of the south of Europe are centres of tubercular contagion. Doctors Lortet and Depugnes, of Lyons, related cases of such infection, and described experiments they made which led them to demand obligatory cremation. They mixed the sputa of consumptives in earth which they placed in pots. A month later the earthworms in them were tubercular, and the earth they passed through communicated the disease to animals. Other experiments were made by placing earthworms on graves where bodies of those who had died from consumption had long lain, and with similar results,—*Daily News*.

EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

INSECTS—Including many *Euphædrae*, *Charaxes*, *Aendæmonia*, *Harpax ocellaria*, ant-lion larvæ, &c., and land shells—*Achatina* and *Subulina*—collected in Sierra Leone. Will exchange for European and exotic Lepidoptera, especially *Charaxes*, and Coleoptera.—W. G. Clements, Frindsbury, Rochester.

VIPERS—Will any readers kindly send me what information they may possess as to the distribution of the Viper in Cornwall? I shall be pleased to send shells, micro-slides, books, etc. in return for spirit specimens of this reptile from any British locality or will purchase examples.—George Mason, 203 Ebury Street, Eaton Square, London.

Will exchange one specimen of *Spongida*, *Spatangus*, *Ananchytes ovatus* and 2 var *Terebratula* and shark's teeth for 6 fossils (localities given) from any system except Cretaceous.—W. G. Clarke, King Street, Thetford No. folk.

BIRD'S EGGS.—Duplicates for exchange: guillemot, kittiwake, razorbill, cormorant, lesser black-backed gull, Norfolk plover, mag-pie, redlegged partridge, com. partridge, sand-martin, etc., mostly in clutches.. Wanted: other clutches.—E. G. Potter, 19 Price Street, York.

DUPLICATES—*Colias edusa* (few) *Lycæna corydon* (males) *Thanoas tages*, *Syrictus alveolus*, *Hesperia sylvanus*, *Zygæna trifolii* (vars.) *Hydracia nictans* (vars.) *Agrotis puta* (light and dark forms) *A suffusa* (few) *Heliodes arbuti* (worn) *Euclidia glyphica*, *E. mi* (few) and many more. Desiderata: Local Lepidoptera, especially northern species and varieties.—A. Ford, Glen Mount, Braybrooke Road, Hastings.

DUPLICATES—About 50 species of British Coleoptera including—*Elaphrus riparius* *Ocypterus ater*, *Nitidula bipustulata*, *Dermestes undulatus*, *Aphodius nitidulus*, *Corynetes rufipes*, *C. ruficollis*, *Hylastes palliatus*, *Trachyphlaeus myrmophilus*, *Coccinella 18-guttata*, *Hopatrum sabulosum*, etc. Desiderata: British or Foreign Coleoptera or offer.—H. Ford, Junr., Berkshire Villa, 29 Crowhurst Road, Brixton, London, s.w.

LEPIDOPTERA.—About 70 British butterflies in papers, 20 species, including clifton blue, chalk-hill blue, peacock, red admiral, wall brown, dingy skipper, silver-studded blue, large and small skippers; what offers?—S. D. C., Dale Cottage, Sherwood, Nottingham.

OFFERED.—“Journal of the Royal Geographical Society” for 1858, 1860 and 1868, “Transactions,” vol. 21, No. 6; and vol. 16, No. 5, also the 26th Report of the Royal Society. Wanted: Trans. Linn. Soc., vol. 4, and various Nos. of “Zoologist.”—Ernest F. Atkins, Clifton Villa, Andover, Hants.

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**A GLIMPSE AT THE CABBAGE AND
SOME CABBAGE EATERS.***

By H. DURRANT.

(Continued from page 29.)

Part II. SOME CABBAGE EATERS.

“*Lymnocharis*, one who loves the lake.

Crambophagus, cabbage eater.”

Battle of the Frogs and Mice.—*Pope*.

“We be cabbage eaters an't please you.”—*Anon.*

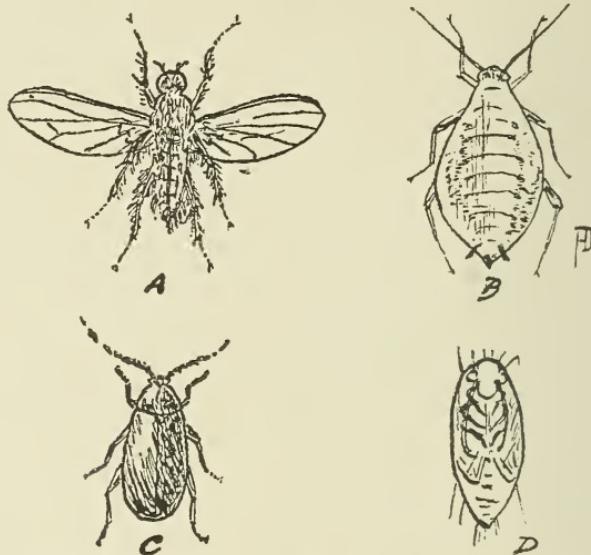
BEFORE we commence this section let me remove all misapprehension that exists on the score of whether or not I intend introducing any member of the multifarious, multiform and multifid multitude prowling about under the disguise of the genus *homo*. Distinctly and succinctly I aver that I do not. All my cabbage eaters will be found in the group designated as the Insecta, for when I speak of the cabbage eaters I mean predaceous ones that injure and destroy the succulent vegetable, before it can be placed at the service of man.

First on the list of course is *Pieris brassicae*, the cabbage butterfly, to attempt to describe which I feel would be an insult to you as an avowed Entomological Society. I refrain. *Pieris rapae*, the small white must be conjuncted with the before mentioned. Many remarks on this would also be quite as absurd. Again I refrain.

Hardly so well known as the two preceding, though equally destructive are the *Halticidæ*, a group of beetles, several species

* Read before the North Kent Entomological and Natural History Society on March 1st, 1893.

of which are known commonly as the Earth flea-beetles. They are small in size as a rule, and have the power of taking long leaps aided by a pair of thick hind-legs; hence their synonym. The size of the majority is about a line, and the largest of them scarcely exceeds a couple of lines. They will be noticed in the spring on old walls, etc., where they appear in considerable numbers previous to commencing their ravages on various culinary vegetables, the cabbage in particular. The eggs are laid on a leaf and this, directly they hatch, is tunneled by the minute larvæ. Enclosed between the two epiderms of the leaf they devour the succulent cellular tissue and leave the leaf useless and dry. They undergo their metamorphoses at the end of a tunnel,



A. *Anthomyia brassicæ* (mag.) B. *Aphis brassicæ*, female (mag.)
C. *Haltica consobrina*, blue cabbage flea or beetle (mag.)
D. Pupa of ditto (mag.)

changing first into a little pupa, afterwards into the perfect voracious beetle of an equally small size, the greater number being of a shining green colour, with sometimes a brown or yellowish tinge. Glancing at the insignificant appearance of the insect, one would scarcely be inclined to believe it capable of such destructive work as our larval cabbage butterfly delights in. It is the immense number of them however that makes the task so easy, and as they will often completely riddle a cabbage with holes, a quicker way of hastening its destruction than biting the edge of the leaf, we can form some idea what enemies they are to this and other kindred plants.

Haltica consobrina. (Blue cabbage flea or beetle) will perhaps be one of the best known among their numbers, abounding about May on the seedling cabbages. In shape it is elliptical. Above it is slightly depressed. In colour, dark blue, punctured. Antennæ are rather long, the fourth and fifth joints being thickened in the male; wings, largish, dotted. Two hinder thighs stout; formed for leaping; the two hinder feet are also longest. *H. obscurella* (Bastard turnip flea or beetle) is similar to the above with the exception of a brighter blue colour of the elytra. This species also does incalculable damage to the spring plants. Before leaving the beetles, I must not omit to notice the *Curculionidæ*. This is one of the most extensive families among the *Coleoptera*, more than 10,000 species having already been discovered. They are commonly known as *Weevils*, a most destructive race, and are distinguished as follows:—Head produced into a long tapering snout on which the antennæ are fixed, these latter being generally elbowed and clavate with the basal portion inserted in a groove; Antennæ generally twelve-jointed, incrassated with the basal joint, long, mandibles obtuse; blade and galea maxillæ united; tarsi four-jointed. The larvæ are thick as a rule and slightly curled on themselves. Colour, white or yellow. Apod, or possessing only the rudiments of legs in the state of minute tubercles. Head strong with a leathery skin. Eyes generally absent.

C. pleurostigma deposits eggs in the rind of the cabbage root; these hatch beneath it, and the rind grows out as their size increases. When they are full fed they eat their way out to pupate in the earth. The imago makes its exit from the pupa in the spring and is in colour shining black, thickly punctured. There is a channel down the snout, and deepish furrows on the elytra, with very short hairs between them. The thighs are toothed beneath.

Yet another enemy to the cabbage!—*Anthomyia brassicæ* (The Cabbage-fly.) This insect is scarcely one half the size of the common house-fly, but the amount of damage it is capable of doing is immense. It is to be seen throughout the summer months, and is of an ashy grey colour with three blackish streaks on the thorax; the abdomen is linear with black stripes in the male, and entirely ashy-grey in the female; wings clear. The larva is very much like the well-known (too much so) onion-fly (*A. ceparum*), but is on the whole rather thicker, the last joint of the abdomen is truncated and surrounded by ten fleshy projections, the four lower of which form pairs. Spiracles, reddish brown. Lives in the roots of cabbages eating away until full fed and causing the destruction of the cabbage by a slow process of rotting. The larvæ may be found feeding even in the depth of winter, but warmth accelerates their metamorphoses rapidly, and in June, eggs, larvæ, pupæ and imagos may be observed at the

same period. The pupa is of a bright brownish-red colour, and of a horny appearance. It is found in the roots where the larvæ are fed. There are several tubercles at the head, and small teeth at the tail.

Among the aphides, small in size but incomputable in number, I shall only take up your time in introducing one—the cabbage-leaf plant-louse (*Aphis brassicæ*). This destructive insect is especially partial to the savoys, though in some seasons it abounds equally as much on other varieties. They are found underneath the leaves from July to the end of October, sometimes indeed to the end of November. All the females will be noticed with their young broods, the males meanwhile wandering restlessly about. These insects multiply exceedingly fast but a check is placed on them by other insects such as the lady-bird and its larvæ, ant-lions, the larvæ of *Syrphus*, etc., or what the consequences would be it is astounding to think.

The male of the *A. brassicæ* is light green in colour, the head and back of trunk being black. The antennæ are seven-jointed. Body indiscriminately spotted with brownish black. Wing nervures deep black and distinct. Apical cell oval. Stigma green. Legs black. Thighs green at their junction with body. The female is of a yellowish green colour and mealy white on back with some irregular spots of black or brownish black. Antennæ not so long as those in the male, black, with the two basal joints green and third ochreous. Body fat and repulsive. Legs black with base of thighs green as the male.

There are also two moths that in their larval state do much towards laying waste and rendering useless the cabbage, and which, in their imago state, are well known to the veriest tyro who has collected insects. I refer to the *Plusia gamma* (Gamma or Silvery moth) and the *Mamestra brassicæ* (Cabbage moth). The former has a lilac tinge on its marbled dark greyish-brown, metallic looking fore-wings. Near the outer border is a golden or silvery shining mark of a shape very closely resembling the Greek letter *Gamma* on which account it received its specific name. It flies in the hot sunshine as well as night. The caterpillar is green, with several white lines along the back, and a yellow one along the sides. It is also slightly hairy. The egg from which it springs is beautifully sculptured, and the pupa to which it changes later on is black, enclosed in a thin woolly web. The larvæ commit their depredations from spring to autumn.

The *Mamestra brassicæ*—Cabbage-moth—a pest in some places, unwelcome everywhere, has its upper wings of a mottled brown colour clouded with a darker tinge of the same and with wavy black lines. Near the margin is an ear-shaped mark spotted with white and near to this a circular pale spot. Towards the fringe is a wavy yellow line, the fringe itself being dotted with black and ochre. The eggs, deposited in May, June or July,

hatch out into larvæ, which, as they mature, vary from green to velvet black. When fully fed they change into a brown pupa and remain so till spring, in confinement very frequently making their imago appearance as early as February. This moth only flies at night, being discovered during the daytime in hedges, etc.

Such then are a few of the enemies the poor cabbage suffers attacks from.* The wonder is that with so extensively voracious a set of feeders, there is any left at all for the consumption of man.

In the case of the larger caterpillars, hand-picking is far and away the best and surest remedy, but, in that of the smaller beetles, Aphides, etc., sprinkling the cabbage with road dust and watering the ground with a decoction of wormwood is very efficacious. The better plan, however is to dip the plant in wormwood up to its collum before planting. This is by far the best plan, as the leaves are rendered so bitter, scarcely any insect will touch them.

(To be continued.)

RARÆ AVES

THAT HAVE PASSED THROUGH THE HANDS OF T. WHITE & SON.

(Continued from page 46.)

Having finished with the eagle tribe (*Falconide*) I will now commence with the owls.

The eagle owl we have had in the flesh, but not killed wild. We have had several snowy owls ; two killed in Scotland about thirty years ago, one of which is now in our possession and the other in the possession of Mr. Maisey, Bleak House, Cheltenham, they were both male birds ; also a female killed in Yorkshire by Dr. Metcalf, and a fourth killed near Birmingham which reached us after it was skinned, this was a male bird.

The long-eared owl, brown owl, and barn owl are very common here. The short-eared owl is much rarer than the other three ; we only get a few each season. Of the scops-eared owl we have had but few ; two killed at Coulesborn Park by Mr. Garner, the head keeper ; one at Higham by Mr. Spring on the Estate of T. G. Parry, Esq. ; one at Badgeworth by Mr. Hughs, the keeper, and

* They are by no means all. A supplementary list would contain among others the following :—*Melanippe fluctuata* (larva), *Tipula oleracea* (larva), plant lice (*Aphis*), *Pieris rapi* (larva), various species of *Pentatoma* in larval and perfect states, *Mamestræ oleracea* (larva), *Mamestræ forficalis* (larva), etc., etc. These are exclusive of the slugs, snails, etc., as mentioned previously.

two killed at Standish Park, near Stroud, by T. Butcher Esq. We have had but three little owls: one killed by myself in Sandy Lane, Charlton, near Cheltenham, and sold to John Rock, Esq., Newcastle-on-Tyne, in the flesh; one killed at Ulingwood, near Birdlip, while the other was shot on Lord Sherborn's estate by J. Cambrey, keeper. We have had only one Tengmalm's owl; it was killed by the keeper at Miserden Park; we preserved it for—Lyons, Esq., who lived at Miserden Park then and gave it to Mr. Duebery, of Cheltenham. The mottled* and hawk owls are quite strangers to us in the flesh; we have not had a specimen.

Great shrikes are not very common here, but we mostly get one or two every season. The red-backed shrike is very common with us. The woodchat shrike we find very rare here; we have had only two—one killed at Shurdington by Mr. Theyers, a farmer, and the other at Badgeworth by a labouring man who was employed by Mr. Oakey, farmer. I heard that a boy from Cheltenham College found a nest of these birds with one egg this last season, but I have not seen it myself.

Cheltenham.

G. J. WHITE.

In reply to a letter from me asking for further information concerning the "black-winged kites" mentioned in the October No. (page 45) Mr. White writes as follows:—"In answer to yours, the black-winged kites that were killed near White's Hill we had to preserve for Mr. Barnett, who undertook to get them preserved for Mr. Phipps who lived at Kite's Nest Farm; I believe he was a solicitor; it was about thirty years ago. This pair of birds was very much smaller than the common kites, with black wings; head, neck, and breast, silvery grey; belly white, and tail a little forked. The one brought to us alive was one of the same kind." This is clear evidence that the birds must have been really *Elanus cæruleus* and the circumstances attending the capture of the pair mentioned seem to prove that they were undoubtedly *wild* birds, yet how is it that none of these specimens have ever come under notice of one of our ornithological authorities? One of the latest workers, Mr. Howard Saunders, for instance, does not admit it to the British list and only mentions the Meath example said to have been shot about 1862,† but observes that "it was unrecognized for ten years, and the evidence is not wholly satisfactory." Perhaps it is still possible, however, to trace one of the above specimens, and I am therefore endeavouring to obtain information as to their present ownership.

Mr. White also writes as follows in reference to the swallow-tailed kite mentioned by him (page 46):—"The swallow-tailed

* Screech owl.—Ed.

† It is significant that Mr. White's specimens were obtained about this same date.—H. K. S.

kite we had alive in the aviary gardens, Cheltenham. We bought it with the other live stock from Mr. Davis, late of the Queen's Hotel, Cheltenham, who took to the gardens, which had been in the possession of Mr. Jessopp. The bird, Mr. Jessopp bought from a farmer who lived near Cleeve Hill, and whose man found the bird caught in a trap by the thick of the foot. His attention was called to it by his dog which kept barking and was afraid to tackle it, and the man had to throw his coat over it before he could take it from the trap." This bird also appears to have escaped notice, for, to quote Mr. Howard Saunders again, he only mentions the Yorkshire occurrence (in 1805) and says that "there is no other authentic record of the occurrence of this species in Great Britain, or in any part of Europe" Man. Brit. Birds, p. (328). Perhaps this bird also can be traced?—H. K. SWANN.

HINTS FOR THE MONTH.

PUPA HUNTING.

Searching for Chrysalides forms the principal occupation of the lepidopterist in November, and, as bred specimens are far better than captured ones, we recommend pupa-hunting to those whose breeding cages are not already well stocked with pupated larvæ. If the weather should happen not to be *too* moist the present time will be found the best of any for finding pupæ. Later on, underground chrysalides will be getting scarce, for moles are very destructive to them; not to mention other foes.

The out-fit required is an ordinary garden trowel, a blunt strong-bladed knife and a small square sieve, which any tinman will make for a few pence, and which will be found very useful for finding small pupæ in loose dry earth or sand.

Seek on the trunks of willows for the hard woody cocoon of *Cerura vinula*, and dig round the roots for *Tæniocampa instabilis*. You will find them in the sods of grass, not only beneath willows but also at the roots of oak. Pull the sod very carefully to pieces and when you have thoroughly searched the sod itself, look just beneath it for the chrysalis of *Ptilodonis palpina*. Deeper down in the ground, you may perhaps find the large red-brown pupa of *Smerinthus ocellatus*.

Under oak trees, before you begin digging, search among the fallen leaves for the cocoon of *Stauropus fagi* enclosed in three or four leaves joined together. If there be an interlacing growth of brambles about the roots, search carefully for the pupæ of *Cymatophora ridens* among the dead leaves and bits of wood, and you

may also perchance find the pupa of *Selenia illustraria* in a very slight cocoon.

If you lever up the sods of grass and pull them to pieces you will be pretty certain to find in them *Tæniocampa stabilis*, *T. cruda*, and perhaps *munda* also. The other pupæ you may find beneath oak trees, are, *Notodonta chaonia*; *N. dodonæa*, and (if you have good luck), *N. trepida*; also, in their localities, the rare *Nyssia hispidaria*, and the very rare *Boarmia consortaria*. Besides these, *Tæniocampa miniosa* sometimes turns up.

Platypteryx falcula pupates in a slight web, inside a doubled up birch leaf; *P. unguicula*, in a slight web among beech leaves; *Dicranura bicustis* in a compact gummy cocoon in the crevices of the bark of alder trees, generally about half way down; *D. furcula* on sallow, not far from the ground; *D. bifida* on aspen; *Notodonta camelina* in a slight cocoon at roots of birch, maple and oak; *N. cucullina* beneath moss at roots of maple; *N. dictæa*, beneath fallen leaves, to which the cocoon is attached, at roots of poplar and sallow; *N. dictæoides* and *N. dromedarius* should be sought beneath fallen leaves at roots of birch; *N. ziczac* pupates in a slight cocoon on the surface of the ground at the foot of poplar and sallow.—A.H.W.

CONCHOLOGICAL NOTES.

The ordinary work for the season is to be considered over now, should the weather keep open, however, there will be found sufficient to keep the industrious conchologist on the warpath for some further time in sheltered places. For what I may term the "butterfly" conchologist it must regretfully close. Do you know though, that some of us are anticipating what is perhaps the most pleasurable employment connected with the science? I mean of course the winter work, i.e., enquiries into the burrowing habits of the mollusca, a department intimately connected with the welfare of the study, and a department which is I am sorry to say, very much over-looked. I have insisted on the necessity of good work being done in this province, many times, as indeed have others claiming to be conchologists, but, somehow, there seems a dearth of spirits able and willing to forsake their warm fire-side to make excursions (or *incursions* as they are very often) into nature.

Let us see what can be done among the readers of the *Naturalists' Journal*, towards increasing our knowledge on the subject. In my notes, which will I hope follow monthly, I shall endeavour to show what can be discovered in this direction, meanwhile let those interested read a paper of mine which appeared in the August number of the *Amateur Naturalist*, on, "The Burrowing of the Mollusca." I shall be pleased, to correspond, receive notes, and explain so far as lies in my power. The following want particular attention:—*Achatina acicula*, *Zonites crystallinus*, *Succinea*

virescens, *Helix fusca*, and *Planorbis carinatus*. The slugs too, are sadly wanting attention. I think *Limnaea glabra* occasionally burrows into the moist sides of the banks of pools entirely out of the water, as I have now and again come across it in this position. *L. peregra* does, I know, burrow into the soft mud at the sides of field ditches.—H.D.

PRACTICAL HINTS ON COLLECTING COLEOPTERA.

By A. FORD.

THERE are few, if any, of the various branches of Natural History which are more interesting to the student than the study of our British Coleoptera; the more one pursues this study, the more interested one becomes in the remarkable structure and habits as well as in the various methods of collecting. I know there are many abler writers than I, who could undertake this subject with, no doubt, much better results, nor do I profess to be original in any of the various methods of collecting, etc., which I intend to lay before the reader, but they are all based on my own practical experience or that of my friends who are interested in this study, and if the instructions I intend giving will induce a few to start collecting or be of service to any who have already started, I shall be amply repaid for my trouble in writing them.

Coleoptera may be said to be found everywhere; indoors, on pathways and pavements, even in our great cities, in woods, ponds, streams, haystacks, refuse heaps, carrion and in fact there is scarcely any locality where a diligent collector may not add specimens to his collection. I intend later on to deal as fully as possible with every method employed by Coleopterists, but, before starting this it will perhaps be best to give a description of the apparatus, etc., required. Firstly, a supply of air-tight store-boxes, or if the tyro be possessed of unlimited means, (which is generally among the desiderata of most collectors) he can purchase a cabinet for storing and arranging his collection, but I should not advise this latter until the student has obtained a few hundred species; store boxes will, however, answer the purpose just as well, and they can be purchased of all dealers in Entomological apparatus for a few shillings each. The next most necessary articles are a supply of cards for mounting—ordinary white cards, a little thicker than visiting cards, will answer the purpose—these can be obtained of most printers and stationers for a few pence the packet—also, half an ounce of powdered gum, Tragacanth, which can be obtained of any chemist

a small portion should be dissolved in water to the consistency of a jelly, experience will alone teach the requisite thickness; many collectors set their beetles in gum arabac as they are easier to set in this gum, afterwards floating them off in water and remounting them in tragacanth as mentioned before, as this gum, is transparent, and leaves no stain on the cards. Gum arabac is best made as follows:—Arabac, one ounce; loaf sugar, half an ounce; water, two ounces. The gum takes a day or two to dissolve in water. I should strongly recommend this gum to all beginners, as well as to older collectors if they have not tried it as it renders setting very much easier, and many species of *Rhyncophora* (weevils), etc., which could not be set with tragacanth can be easily set with this gum. A few collecting bottles and small tubes or phials are the next things which will be required, the former are made as follows:—Procure a few wide-mouthed bottles about three or four ounces each with tight fitting corks, next, procure a few glass tubes about two inches long, and about a third of an inch in diameter; a hole must be bored through the cork, so that the tube can be placed through it, so that it fits firmly and leaving about half an inch of tube above the cork, the beetles can then be dropped through the tube without removing the cork, a small cork should be fitted in the tube.

The student should always carry a laurel bottle with him when out on his collecting expeditions for the purpose of killing at once the large and predaceous species such as the *Cicindelidæ* (Tiger beetles), *Carabidae* (Ground beetles), etc., in fact all the larger species should be dropped into the laurel jar, otherwise they would make a meal of the smaller and more delicate species; this is easily made by using a bottle as described above containing a small muslin bag of well bruised young laurel leaves if the shoots can be obtained, so much the better, as these will be stronger. The laurel should be changed every few days as it soon loses its strength. It should also be remembered that insects killed in the laurel bottle should be left in for at least twenty-four hours as they will then be in a good condition for setting. If taken out before that time they will be found to be very rigid and by no means easy to set. Of course it must be remembered that no small and delicate species should be placed in the laurel jar as these would drop to pieces if left for a few hours in the laurel, this is especially the case with most of the *Brachelytra*. The four most useful articles for out-door collecting are:—a sweep net, a large and strong pocket knife, a chisel, and a trowel, all very inexpensive articles. The first of these can either be purchased from a dealer or the frame can be made by a blacksmith for a small sum. The ring should be of iron, a quarter to a third of an inch in diameter and from four to five feet in circumference. It should be made to fit on an ordinary walking stick with an ordinary screw or a Y shaped piece to fit

over the end of the stick. The net should be made of stout holland with a narrow piece of leather sewn round the rim to prevent the edges from wearing out, it should be half-a-yard deep with the corners rounded off.

The next most important point, and to many people the most unpleasant is *killing*. The quickest and most painless way to do this is to drop the specimens into boiling water, but be sure the water is boiling, if this is done the beetles are killed instantly. Many species can be left in the water for hours without spoiling but some of the delicate species with soft elytra (wing cases), especially the *Brachelytra* or "cock-tails" as they are popularly called, should be taken out immediately with a small brush and laid on blotting paper, they should then be set as soon as possible. For setting a few setting needles will be required, these can easily be made by using ordinary needles fixed (eye-end) into small sticks, a match will do very well. A small patch of gum should be laid on the card with the brush, about the size of the beetle to be set, when by means of the setting-needle the legs and antennæ should be drawn out neatly and evenly on each side. A little experience will soon teach the student to set neatly. The beetles should be set in rows, leaving a small space between each insect and from a quarter of an inch to an inch between each row (according to the size of the species set) when dry, which will be in a few hours. They should each be cut out separately and a small entomological pin run through the card a quarter or half an inch below the insect, each specimen should then be labelled with the date and locality, and any other information the student may think useful, before being pinned away in the store-box. Much valuable information may thus be obtained. Of course if the insects are set in gum arabac, they will have to be remounted, when dry (in a day or two), in gum tragacanth, they can then be cut out as before mentioned.

(To be continued.)

THE BIRDS OF CAMBRIDGESHIRE.*

By ALBERT H. WATERS, B.A.

(Continued from page 51.)

GOLDEN ORIOLE.

I had the pleasure of seeing at Wicken, this summer, a nest of

* ERRATA.—Page 51 (October Number), line 14, after Grasshopper Warbler, read, “(*Locustella nævia*)”; line 15, for “(*Locustella nævia*)” read “(*Sylvia luscinoides*).”

the Golden Oriole (*Oriolus galbula*). I mentioned its occurrence in the county, in the August number, but, I have not known of its nesting before for many years.

* * * *

We have such a press of matter this month, that there is not room for more than these few brief lines. In order to make my account of our avifauna more complete, I shall be glad if Cambridgeshire ornithologists will send me notes of rare birds they have obtained in this county, also of any variation in the plumage or colouration of the eggs they may have observed.

FIELD CLUBS AND SOCIETIES.

ESSEX FIELD CLUB OUTING.—By the courtesy of Mr. J. F. Lescher, J.P., over forty members of the Essex Field Club recently visited Boyles Court, near Brentwood, for the purpose of inspecting the interesting and valuable Hoy Collection of British Birds. The party—which included several ladies—met at Harold Wood railway station. The directors were Messrs. J. E. Harting, Miller Christy, and W. Crouch; the others present included Mr. W. Cole, Dr. Bodkin, Mr. E. A. Fitch, C.C., Mr. C. Wright, and Mr. Oldham. Mr. J. E. Harting, F.L.S., gave a short account of the late Mr. Hoy and pointed out the more interesting specimens in the collection. Mr. J. D. Hoy, was born in 1797, and resided at Stoke Priory, Stoke-by-Nayland, which (though close to the Essex border) is in Suffolk. He was a first-rate shot and a skilled bird preserver. Dr. Bree has declared that “as a working naturalist he was almost unequalled in his day in this country.” He collected chiefly upon the coasts of Norfolk and Suffolk, and his collection therefore contains few or no Essex specimens of importance. During the latter part of his life he paid many visits to Holland and Germany. It was during one of these expeditions, when collecting mainly among swamps and marshes, that he laid the foundation of the illness, of which, at the early age of 42, he died on October 15th, 1839. He published little beyond a few notes in various natural history periodicals, but Hewitson, Yarrell, and other writers in the early part of the century, received much valuable assistance from him. On his death his collection passed into the possession of his sister, the late Mrs. Lescher, of Boyles Court, mother of Mr. J. F. Lescher. It is contained in 269 separate cases, which have been recently re-arranged.

LAMBETH FIELD CLUB.—“A talk about Toadstools” was the subject of the October lecture of this club delivered by Mr.

Edward Step on the 2nd inst. at the club's rooms, St. Mary Newington Schools, Newington Butts, S.E. The lecturer first shewed how the presence of the green substance chlorophyll in a plant shewed that it "earned an honest living" by deriving its nourishment from the soil direct. But toadstools, and the great family of fungi generally, were "aristocrats," living on the proceeds of others as true parasites,—and they had no chlorophyll whatever in their composition, as, for instance, had the little *Protococcus* the microscopic plant appearing on posts and trunks of trees after rain, which the lecturer showed for comparison. The lowest forms of fungi were illustrated by the yeast plant (*Torula*) and the way in which it abstracted the oxygen from sugar and gave out carbonic acid gas and alcohol were explained. It was but a step from the yeast plant to the blue moulds (*Penicillium*) which were practically a collection of yeast cells put end to end to form an upright stalk, crowned by divergent filaments made up also on the same principle. The white moulds (*Mucor*) differed from these in having the cell-walls, all broken away, so that the stem was one long cell, at the summit of which a globular body called a sporangium was developed. In the interior of this the spores were produced escaping as fine powder on the ultimate bursting of the sporangium. Coming to the higher forms of fungi, the lecturer said it was an error to suppose a mushroom the production of but a single night, as the underground threads or hyphæ, which formed its preliminary stage, had been growing for perhaps a year. The enormous strength which fungi displayed in growing was illustrated by the case of the town of Basingstoke, which, after being repaved, had had its flag-stones actually forced from their beds by the growth of large toadstools beneath; one stone thus lifted measured twenty-one inches by twenty-one inches and weighed twenty pounds. Some fungi took a considerable time in developing. The morel took thirty-one days, the Geasters or "earth stars" six months, and the truffle of commerce a year, before arriving at maturity. The lecturer then proceeded to describe a number of edible and poisonous fungi, photographs and drawings of which were exhibited on the screen by means of the oxy-hydrogen lantern. Some specimens were also shewn round, but very few had been obtainable owing to the dryness of the season. One of the most interesting was a specimen of the local *Sparassis crispa*, from Esher, which looked something like a cauliflour and was very good to eat. Among those described were the fly agaric, the parasol mushrooms, the Russules, the milky Lactarii, the chantarelle (one of the most delicious) the puff balls, oyster mushrooms, Boleti, and truffles. The lecturer warned his audience against buying mushrooms, for those sold in London were far from fresh, as evidenced by the blackness of their gills, and under these circumstances these and other fungi of an edible character might prove dangerous. He also spoke in

strong terms of the fallacy of supposing that there was any rule whatever for discriminating between edible and poisonous species. These respective characters could be learnt by anyone who would take the trouble to master a few details and exercise a proper amount of care in identifying specimens. Many edible species were unmistakable when their "points" were known. But apart from the gastronomic value of fungi, they possessed an interest from their often beautiful forms and colours, which added greatly to the pleasure of a woodland ramble, while the tougher and harder kinds might be readily dried and preserved. An excellent little guide to the student of the larger fungi was that recently issued at the modest sum of fourpence by the directors of the British Museum, South Kensington. On October 16th, at 8 p.m., a "gossip meeting," the first of the season, will be held, when papers will be read on matters relating to fruits and seeds, and, it is hoped, fully discussed. On November 6th, Mr. W. B. Baskerville will deliver a lecture entitled "Geography and Civilisation."

THE PRACTICAL NATURALISTS' SOCIETY.—We propose to send out again some circulating M.S. magazines and trust one for Ornithology will be ready immediately. Will members desirous of being included in the "round" let us know at once. Among the others contemplated are one for Geology (including prehistoric archaeology), Entomology, Botany and Microscopy. We are desirous of sending round a box of slides with the last and should like to have a postal box of specimens accompanying the Entomological Circulation. We shall be glad to have names for all these, or any others, and as soon as we have, say, a dozen will send them off. Each member will be expected to add something to the ever-accumulating store of information each circulation, will contain, and photos and drawings will always be welcomed whether for loan or to be afterwards added to the Society's Library. The Secretary is anxious to make the Circulating M.S. Magazines as useful and interesting as possible and hopes that in this he will have the co-operation of every member. They will dispel the ennui of a long winter's evening to many an isolated naturalist in a remote country district, and those whom inclement weather is keeping indoors can "fight their battles over again" by recounting their doings in the natural history way last summer, for the benefit of their brother or sister entomologists, ornithologists, etc. In fact gossiping letters are just what we want in these projected, or rather *revived*, Circulating M.S. Magazines.—ALBERT H. WATERS, B.A., Hon. Secretary.

JACK SNIPE AT FULHAM.—On Wednesday last, Mr. J. Chill shot a beautiful Jack Snipe on Mr. Morrison's farm. It is beautifully marked, and is a very rare bird in the neighbourhood of Fulham.—*Fulham Advertiser*, October 20th.

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*)

NOTES FROM ROYSTON

September 16th : A beautiful snow bunting (*Plectrophenax nivalis*) was shot near here this morning. This bird is occasionally met with in very severe weather, but I have never heard of one having been seen so early in the season, neither did I ever see one in such fine plumage.

The "big gooseberry" has had its day, so it must fairly give place to the "big apple," which I have now before me (Peasgood's Nonsuch), it weighs $2\frac{1}{2}$ ounces, it is the largest apple ever known to have grown on our poor chalk soil.

October 4th : A fine specimen of a very old female sparrow-hawk (*Accipiter nisus*) was brought in this morning. It is in the hands of my friend Mr. Norman, for preservation, he tells me it is the finest example of a female bird acquiring the plumage of the male he has ever met with.

October 6th : A friend who has just returned from Newark, Notts, tells me that a cormorant (*Phalacrocorax carbo*) has taken possession of the weather vane of the church, which is between two and three hundred feet high; it roosts there all night until five in the morning, when it goes down to the Trent to catch its breakfast, it soon returns, at one o'clock it goes for luncheon, and at four for dinner, it has a good view of the river and the country, as I believe the spire of the church is the highest in the neighbourhood.

October 6th : I was shown a potato this morning with a piece of twitch grass grown completely through it, this is not of frequent occurrence.

October 11th : The Cormorant has now been on the church at Newark about a fortnight, and was there to-day.

October 14th : I have been informed this morning, that some Cormorants have taken possession of the roof of Ely Cathedral. I expect the reason for these birds appearing so far inland, is, that there must either be a scarcity of fish in their usual feeding place, or a much larger supply than usual in our rivers.

October 15th, 1893.

RAMBLER.

ICTERINE WARBLER IN NORFOLK.

At the museum last week, Mr. Southwell, F.Z.S., made some remarks on the male Icterine Warbler (*Hypolais icterina*) shot at Wells, Norfolk, September 4th. Mr. Roberts (bird-stuffer) showed me this bird last Saturday, September 30th. It was badly shot in the head. Mr. Roberts told me it was shot by a Surrey gentleman.—W. H. M. A.
Norwich.

SIMYRA VENOSA

I have lately made two expeditions to Wicken Fen, and have there had the pleasure of meeting with the larvæ of this moth in great abundance. It feeds by day on reeds and is very easy to find. A labourer in the neighbourhood informed one of our party that he obtained a boxful of *Machaon* larvæ a few days previously; I obtained two from him. The larva of *Rubi* is common there, as also are *Neustria* and *Potatoria*, which latter I have not found before in October.—E. PORTER.

October 11th. 1893.

TO CORRESPONDENTS.

WE TRUST that the "Hints for the month" introduced in this issue will satisfy our readers that we do not intend to stay our hand just yet. We intend shortly to add "hints" for Coleopterists, Botanists, and Oologists.

WILL THOSE who do not see their contributions in this No. please understand that they are held over through lack of space.

W. K., GT. YARMOUTH.—You can obtain the N. J. through Mr. S. C. Blake, 20 Market Place, Gt. Yarmouth.

W. B., ST. ANDREW'S.—Shall be inserted.

W. W. E., ST. LEONARD'S, AND OTHERS.—You will find some particulars *re* P. N. S. in this issue; if you desire further information write to the Secretary, A. H. Waters, B.A., etc, Cambridge. We have no official connection with the P. N. S. please refer to page vi of advertisement sheet.

A LARGE eagle, with dark plumage, measuring eight feet across the wings, was shot at Westwell, Kent, this morning. The bird has been flying about the neighbourhood several days.—ECHO.
Sept. 21st.

BOOK NOTES.

THOSE who are familiar with Mr. Phil Robinson's published works will welcome the new volume of essays he has just produced under the title of *SOME COUNTRY SIGHTS AND SOUNDS*.* They constitute a miscellaneous collection, dealing with a variety of subjects, but to our mind quite the best of them is that entitled, "My Kentish Heath."

* London : T. Fisher Unwin, 6/-.



EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

WANTED.—Foreign Shells in exchange for other foreign shells or European butterflies. List sent.—Col. Parry, 18 Hyde Gardens, Eastbourne.

WANTED.—Healthy pupæ of British butterflies, Sphinges and other moths. Rare bird's eggs offered.—W. Wells Bladen, Stone, Staffs.

OFFERED.—*A. cygnea*, *A. anatina*, *Unio pictorum*, *U. tumidus*, *P. viviparus*, *P. fontinalis*, *C. elegans*, Desiderata: British coleoptera, or other shells not in collection.—C. Coles, 61 Barington Road, Brixton, s. w.

WANTED.—Fossils from Carboniferous, Jurassic, and Cretaceous systems; will exchange books.—J. H. Lofthouse, 42 Mayfield Grove, Harrogate.

FOR EXCHANGE.—*Conigera*, *Impura*, *Testacea*, *Micacea*, *Nictitans*, *Graminis*, *Gemina*, *Fasciuncula*, *Litrosa*, *Cursoria*, *Valigera*, *Nigricans*, *Tritici*, *Suffusa*, *Plecta*, *Festiva*, *Conflua* (Scotch var.) *Rubi*, *Urticæ*, *Chrysitis*, *Pulchrina*, *Adusta*, *Munitata*, *Ribesaria*, *Filipendula*. Desiderata: numerous.—William Catto, Cote Town, Bridge of Don, by Aberdeen, N.B.

FOR EXCHANGE.—Field Naturalists Handbook," by Rev. J. G. Wood; new. What offers in British land, freshwater, or marine shells.—Crane, 55 Brooke Rd., Stoke Newington, London.

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With the assistance of ALBERT H. WATERS, B.A., &c., A. FORD and H. DURRANT.

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**A GLIMPSE AT THE CABBAGE AND
SOME CABBAGE EATERS.***

By H. DURRANT.

(Concluded from page 61.)

Part II. SOME CABBAGE EATERS.

BUT the farmer has friends as well as foes—friends who can help him when he cannot help himself and who, moreover, are constantly at work, need no explanations, require no thanks, and tolerate no interference. So that while he is swearing and fuming at his ill-luck, they are slaying his unwarrantable enemies—thousands at one fell stroke!

Yes, the Ichneumons are a brave and goodly crew, and deserve our best thanks and protection. But, we are far from being well acquainted with their habits and life history, and I am sure a little energy in this direction would be well rewarded, for it is not an uninteresting group by an means. I daresay nearly every collector has had his experience with them—experience of such a character that no doubt made him very wild. I mean of course, when he brought home that beautiful larva of a “good species” and carefully tended it with the hope of obtaining that beautiful “cabinet specimen,” which should be the envy and rouse the base desire of his neighbour—his deadly rival. But fate willed it otherwise, and how blighted were his hopes, and how wicked his soul when he beheld one morning, the erstwhile holder of his hopes, stretched stiff in death, pierced with holes and surrounded

* Read before the North Kent Entomological and Natural History Society,
March 1st, 1893.

by a number of little woolly yellow cocoons ! But memories are painful. Let us on. We will just glance at a few or my paper would not be complete. I have chosen the following :—*Microgaster glomeratus*, *Pteromalus puparum*, and *Pimpla instigator*, as typical species.

Microgaster Glomeratus.—This is a very small insect measuring scarcely a quarter of an inch in expanse. In colour, it is black with fawn or ochreous coloured legs, the hinder thighs being black at the base and all the shanks and feet tipped with brown. Antennæ as long as the wings, which are iridescent and contain a brownish spot on the fore ones. The insect by means of its ovipositor deposits eggs in various species of caterpillars. In this position the eggs hatch out into tiny white maggots which do not however at once make their exit from their larval host. No, they feed on the fatty substances of the viscera, carefully avoiding all vital parts, for should these be attacked or injured their own death would be quite as assured as the caterpillars. The caterpillar up to now has experienced no inconvenience, or at least it appears not to have done so, but the Ichneumon larvæ have during this time arrived at their ecdysis and accordingly to undergo such they eat their way through the vital and other parts without discrimination and spin silky, yellow cocoons on and around its dead body, within which they complete their metamorphoses and in a few days appear as perfect imagoes.

Pteromalus puparum.—Thousands of *P. brassicæ* fall victims to this indefatigable little worker as they do to the one just described. In this case the larval host generally reaches the pupal stage before its decease thus differing from *M. glomeratus*. The end is the same though with all of them and justifies the means. The larva rarely escapes. In *P. puparum* (see page 25) the sexes differ in appearance considerably. Thus the male is of a brilliant green colour and very glossy. The antennæ long, and ochreous or tawny. The wings beautifully limpid. The legs bright orange, with the tips of feet in tinge black. The female on the other hand is greenish black, sometimes violet alone. The antennæ are black, but tawny at the base. The legs are bright ochreous with intense black thighs except the base and tips. The four hinder shanks have the middle portion dark ochreous with tips of feet black. Expanse about $3\frac{1}{4}$ lines.

Pimpla instigator.—Handsome but evil smelling. This insect has an expanse of an inch. It is black ; the wings have a yellowish tinge with brown nervures and a stigma on fore pair. The legs are red, with the hips and hind feet quite black. Antennæ long and slender. Ovipositor about half length of body ; black and strong. The female lays a single egg in the pupa of *P. brassicæ*. It is hardly necessary to say that an imago of *P. instigator* makes its appearance from the pupa and not *P. brassicæ*, this latter being nowhere in it, so to speak. From Midsummer to

Michaelmas is the season for this parasitic insect.

Before taking my leave of the subject it has occurred to me that I have made no mention of the egg parasites. Surely they deserve a short notice so I hasten to place before you a typical species. It is *Polynema gracilis*. This insect is one and a half lines in expanse, shining black, with long, slender, flail-like antennæ, ochreous at their base and clubbed at the tip. The abdomen possesses a short stiff ovipositor. Wings transparent, nervureless and pubescent. Legs slender, and tawny or ochreous. Instead of puncturing the larva or pupa and depositing its egg therein, this pigmy insect performs on the egg. Thus there are eggs within an egg, this latter being of no great size *itself* and certainly not encouraging the introduction into its substance of *very* large eggs!

And now I suppose we must leave our cabbage and cabbage eaters, for the descriptions are becoming tiresome I can see, slight as they are; but they were necessary, for I doubt not many who call themselves entomologists have never left the beaten and orthodox track of the Macro Lepidoptera. To these, a short study of a group like the Ichneumons would read like a fairy tale, and would be quite as interesting. Another time we will go into the life history of some of these insects more deeply, when I hope to show you much that is wonderful, if not altogether fresh, but for the present I must make my very best bow, and wish you all, gentlemen, a very GOOD EVENING!

PRACTICAL HINTS ON COLLECTING COLEOPTERA.

By A. FORD.

(Continued from page 67.)

I should strongly recommend all who intend taking up this study, to pay a visit to some museum where there is a representative collection of British Coleoptera, as the student will learn more by an hour or two's careful study of an authentic collection than in a week of book-reading on the subject; he will soon learn the chief characteristics of the various groups. In last month's number I omitted to mention, among the apparatus required by the student, a water-net, which is indispensable to the Coleopterist; this can be purchased for a small sum of most dealers. The following is a list of the various groups of our indigenous species, with the principal habitat of each group and number of species.—

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Hydradephaga (Water-beetles)--134 species--Ditches, ponds, streams, etc., among water plants.

Palpicornia--95 species--Same localities as above, generally on the borders of ponds, etc., and in marshy places, some occur in the excrement of animals, vegetable refuse, etc.

Brachelytra ("Cock-tails")--about 800 species--In refuse of every description, carrion, excrement, fungi, especially when decaying: under bark and in rotten wood; in the banks of ditches, etc.; at the roots of grass; in moss; among dead and decaying leaves, etc.; in fact there is scarcely any locality where representatives of this group may not be found; a few species, even, occur under stones and among decaying seaweed on the sea-shore, above high-water mark.

Clavicornia--about 640 species--On various plants and trees in rotten wood and under bark; the same may be said of this group as of the preceding.

Lamellicornia (Chafers, etc.)--90 species--In the excrement of various animals; many species may be found on pathways, some occur on flowers, while two or three are found in the decaying trunks of trees. This group includes the "Stag-beetle" (*Lucanus cervus*) which is common in many localities in the South, it may be netted on the wing at dusk or taken at the roots of trees during the daytime.

Sternoxi (Skip-jacks)--80 species--On various trees and plants, several occur on hawthorn blossom.

Malacoderma--95 species--On flowers, especially, Umbelliferous plants, and trees; a few are found in dried skins, fungi, etc.

Teredilia--60 species--Most of these occur in fungi, especially the Boleti growing on old trees and stumps, some are found in rotten wood of trees, posts, etc.; a few occur in houses, where they burrow into old furniture and produce a curious ticking sound which can be heard quite plainly in the night-time and has earned for them the rather ominous title of the "Death-watch." Two or three others may occasionally be found in cupboards.

Rhyncophora (Weevils)--About 550 species--These occur on nearly every kind of tree, plant, shrub, etc.; at the roots of grass, especially in sandy places; in moss, tufts, haystack and other refuse, during the winter; a few feed on grain and occasionally do considerable damage in granaries, some may be taken from various kinds of water plants, a few occur in rotten wood, etc.

Longicornia--57 species--On flowers, in dead hedges, decaying trees, old posts, etc., a few may be beaten out of old faggot-stacks.

Phytophaga--about 240 species--On trees, flowers, etc., some are found on water-plants, others on various vegetables, which

they sometimes damage to a considerable extent ; in the winter, some of them hibernate in moss, tufts of grass, refuse, under loose bark, etc.



Larva and Imago of a Weevil (*Balaninus*).

Trimera (Lady-birds)---42 species---Various plants and trees, especially hops and firs, they frequently occur in vast swarms on heaths, and are very useful, as they feed upon plant-lice (*Aphides*) which, but for these and other checks would multiply to such an enormous extent as to destroy all vegetation ; they may be found hibernating in moss, in winter.

Heteromera---122 species---On flowers, in rotten wood, at roots of grass in sandy places, in houses, bakeries, among refuse, and in a variety of other situations, one or two species occurring in wasp nests, many species occur on sand-hills on the coast.

This concludes the groups of our British Coleoptera and in my "Hints to Coleopterists" each month I hope to deal as fully as possible with the various methods of collecting ; and I shall be pleased at any time to assist beginners, by determining their specimens and giving them any information in my power, if they care to write me on the subject.

NOTES ON THE GLOUCESTERSHIRE LEPIDOPTERA.

By A. LIONEL CLARKE.

The year 1893 will be engraved upon the memory of all lovers of Natural History for some great length of time, inasmuch that it has not only been remarkable for the long spell of fine hot weather which has given us every opportunity to fully enjoy the out-door part of the study, but it has caused such a departure from the usual dates and the number of individuals of each species

generally met with, that I think the following short notes of those species which have been *mostly* affected in this district may be of interest.

The whole of the species mentioned below have been nearly a month earlier than former years :—

Rapæ, Napi and *Brassicæ* : very common ; the larvæ of the first broods doing great damage.

Cardamines : not so plentiful, but common.

Rhamni : very scarce ; only a few single specimens being met with.

Edusa : I have not heard of a single specimen being taken this season in the county ; although when in Devonshire, between Dawlish and Teignmouth, during the earlier part of August I saw some seven or eight specimens on the railway bank there.

Paphia : very common at Dursley, but very local.

Aglaia : very scarce ; I have in previous years been able to take many of these in the trenches on the hills.

Artemis : This pretty little fritillary is very local, occurring only in one field in any quantity, for some few years they have been gradually diminishing (which was put down to the field having been partly drained) however, with this warm dry season, they reappeared in greater numbers than formerly.

Atalanta : very abundant ; especially in orchards.

Io : rather scarce.

Cardui : This has been very rare (in fact I have not seen one specimen on the wing).

Phœas : I think the Small copper, as it is more familiarly called, has taken full advantage of this season, for beginning early they continued right up to the end of September ; during about the middle of this time, it was by far the commonest species to be met with upon the slopes of the hills, particularly along the roads.

Adonis and *Alsus* : very plentiful in a few localities.

Arion : This beautiful butterfly, the largest species of our *Lycanidæ*, I am sorry to have to record as *blank* once more. It is now six years ago since the last season passed without its appearance being noted, and for three or four years previous to that it escaped all observation ; lately however it has been gradually re-establishing itself and we were looking forward to the time when they would once again have held the sway of the hills—but alas ! Those that speculate are often-times disappointed, and thus it has proved with Arion. Last year, instead of continuing the steady increase, it nearly failed altogether ; while this year, although the whole range of its haunts was worked with greater energy and higher hopes than on any former occasion, not only by all the local enthusiasts but by collectors from considerable distances, I believe not one specimen or any signs of the larvæ were discovered.

In the Ent. Mon. Mag. some seven years ago, an account of

Arion was then given from my observations, and the fact of its gradually becoming extinct was attributed to the very wet seasons we were then having. Since then, however, they had been gradually increasing in numbers until the year 1891, but in 1892 only a very few were seen, and this season not one. Now, however, the last two seasons have been as favorable (in my opinion) as possible for the increase of it and yet it is only too apparent that with us it is nearly (if not quite) extinct.

I can only account for its disappearance in these parts from the fact of the surrounding woods being cleared from timber which is strewn about, but the district it is supposed to inhabit covers such a large area that there are plenty of places for miles untouched where its food plant "wild thyme" is prolific.

M. stellatarum has been literally swarming in places, and specimens could be taken all around and even right in the centre of the town. One fine specimen I took in my garden in the middle of the day.

Platiginis: This species in one or two places was out in great abundance; any number could be taken at once without moving at Haresfield.

Around the lamps *Menthastri* could be seen, this apparently white moth flitting around in large numbers. I was much interested in watching the flight of this species, for many of them would fly with such force against the lamps as to partially stun themselves, afterwards falling into the road when they could be easily collected.

On the ivy there were only four species that were fairly abundant--*Lota*, *Lunosa*, *Pistacina* and *Protea*--and these could be secured in large quantities if needed. The appearance of the other species, excepting that generally speaking they were to be taken earlier, has been similar to other years.

HINTS FOR THE MONTH.

PUPA HUNTING.

Lepidopterists living in the south should search among the dead stems of bitter vetch (*Orobus tuberosus*) and tufted vetch (*Vicia cracca*) or twigs near where these plants have been growing for the whitish-grey chrysalis of *Leucophasia sinapis*. It is suspended by the tail and a silken belt round the middle.

The pupa of *Anthocharis cardamines* may be found throughout the winter on the dead stems of the hedge mustard (*Sisymbrium officinale*) and may be readily recognised by its singularly bent shape. It is greyish in colour, with whitish stripes on each side.

The pupa of *Epione apiciaria* should be sought for among leaves lying beneath alder trees; and when pupa-hunting at the foot of oak trees *Odontopera bidentata* may be looked for beneath moss. *Aplasta ononaria* is another species which delights to pupate underneath moss.

Hemorophila abruptaria spins a cocoon in an angle of the stems of lilac trees and may also be found on rose. *Boarmia rhomboidaria* may sometimes be found by digging beneath rose bushes, but more often beneath birch trees and wild plum. *Amphidasis betularia*, *Pygerabucephala*, and some of those previously mentioned, will be turned up by the trowel when digging beneath lime trees. *Nyssia hispidaria* should be looked for in the ground at the foot of oak trees.

Pupa digging should not be confined to the immediate neighbourhood of trees, as many kinds may be found at the base of old walls where the ground is soft and mossy; also close to gate posts, and even in open ground, especially in gardens. The rare *Hecatera dysodea* may be found sometimes in the latter when digging up an old lettuce bed, and others of the genus should be sought for where sowthistles, goosefoot and nettles have been growing.—A. H. W.

LEPIDOPTERA.

Pæcilocampa populi may be found in outhouses, etc.; *Hybernia aurantiaria* at rest on birch and oak twigs after dark, or flying just at dusk; *H. defoliaria* flying at dusk about hedges and oak trees and *Cheimatobia brunata* sitting on the leafless twigs of orchard and other trees.

Many micro larvæ may be found now in dry thistle-stems, teasel heads, the roots of mugwort and yarrow, fir cones and moss and on lichens.—A. H. W.

COLEOPTERA.

The collector of Coleoptera will find plenty of beetles during December, if he only takes the trouble to look for them. Many species will be found in haystacks; the loose hay and refuse collected round the bottom of the stack and underneath is usually the most productive part; this should be shaken over a newspaper which should be very carefully examined otherwise many species will be passed over. Faggot-stacks, especially when situated in woods, are often very productive: the bundles of faggots should be shaken over a paper, many rare and local insects having been taken in this way.

Dead leaves, in woods, are well worth working; this month, very local and rare beetles are often obtained in this way; only those leaves which are damp and decaying should be tried, and especially when they lie a few inches deep in some partly dry ditch; they should be shaken and examined very carefully on a

newspaper which latter, by-the-bye, is one of the most useful articles to the Coleopterist. This is one of the best months for the water-beetles (*Hydradephaga*) and the collector should examine the contents of every pond, stream, and ditch with the aid of a water net, and no pool, no matter how small, should be passed over, as I have taken rare beetles from a pool less than a foot in diameter!—A. F.

NOTES AND NEWS.

A CANARY'S NEST AT HIGHGATE.—Mr. B. R. Harrison informs us that a canary's nest, containing three young birds, was found recently in Highgate Woods; the young birds being taken by the discoverer, to whom the find proved to be rather a profitable one. Have any other of our readers ever known an instance of canaries breeding wild in this country?

THE PROTECTION OF BIRD'S EGGS.—In the September number of "Nature Notes" Dr. Vachell gives the results of the efforts of the committee of the British Association appointed in 1891 "to consider proposals for the legislative protection of wild birds' eggs," and he also appeals to Natural History Societies throughout the kingdom to use their influence with their parliamentary representatives to secure the acceptance of the Bill now before Parliament. This Bill, which embodies the objects of the Committee, provides for the reservation of certain areas in which no eggs of wild birds may be taken, and we think that such a plan could be carried out without reasonable opposition from any quarter. It certainly is far more just than the law now in force in Nova Scotia, for instance, where it is illegal to take *any kind* of wild bird or its eggs throughout the entire province during the breeding season—a majority rule which absolutely ignores the claims of a considerable number of persons who are virtually deprived of the right of enjoying a healthful and instructive recreation. It is true that scientific men are in some way excepted, but this exception does not extend to the more humble, and numerous, class of students. The above-mentioned Bill, however, disclaims any such unjust intentions and we therefore cordially extend to it our support.

"FOUND CRAWLING TO A FLEET-ST. OFFICE.—A remarkable beetle (says a correspondent) has been found crawling on the staircase of a Fleet-street office. Its back is covered by wing-cases of a dull slatey-grey color, with minute black spots. Its head in front is not unlike that of a cow, the eyes, nose, and horns being well developed, though there are no ears. Behind this is a

mound-shaped protuberance of the same color as the wing-cases, but crossed by a row of brick-red spots. The little creature is two-thirds of an inch long. Its most remarkable feature is its long feelers, which are not unlike long bamboo fishing-rods joined to the ends of the horns. Each of these has nine joints, and the joints are black, whilst the rest of the feeler is nearly white. They are moved freely in any direction, and when laterally extended give the beetle a breath of six and a half inches. Perhaps some reader can explain whence this little visitor comes." The above is a cutting from the "Star" of August 14th; from the extraordinary description, it is impossible to state what species it may be, but from the long "feelers" (antennæ) it may be *Astynomus ædilis* known in Scotland as the "Timberman beetle," it is not uncommon in some parts of Scotland although very local; it is, however, very rare in England and the few specimens found in the South are probably imported with timber brought from the North. It belongs to the Longicornia, and in its larvæ state it feeds on the wood of pines, it is also a common insect in various parts of the Continent.—A FORD.

SOME GLOUCESTERSHIRE ALBINOS.—We have had a pure white lesser white-throat to preserve which was killed near Cirencester, also a pure white sparrow from the same place. Two white starlings have been killed at Prestbury, also a white thrush at the Sandfields, near Cheltenham, and a white sparrow at Bentham.—G. J. WHITE.

ABUNDANCE OF APATURA IRIS.—All butterfly collectors will be pleased to hear that the purple emperor is to be found in great quantities at Rotherham. A correspondent to the *Yorkshire Post* says that one can see dozens at a time feeding on the Plums in that neighbourhood.—*The People*, Sept. 10th, 1893.

CATOCALA NUPTA ON A CHESTNUT TREE.—I saw a fine specimen of *Catocala nupta*, apparently just out of the chrysalis, at rest on a chestnut tree in the park at Ely, in the early part of last August. There were no willows in the immediate vicinity, and it looked too fresh to have flown far, or I should not have thought its occurrence there so extraordinary.—A. H. WATERS.

LATE PUPATION OF PYRAMEIS ATALANTA.—Writing at the end of September I have a larva or two of *P. Atalanta* which are still feeding and there seems every prospect of them waiting till October before they pupate.—A. H. WATERS, Cambridge.

SIR Anthony Ashley first introduced the cabbage into England from Holland. It is said that a cabbage cut out of stone lies at his feet on his monument at Wimborne, in Dorsetshire.

FIELD CLUBS AND SOCIETIES.

CAMBRIDGE ENTOMOLOGICAL SOCIETY.—At the last meeting of this Society Mr. Farren exhibited a very fine series of *Sesiidae* and *Degeridae*, also a “little auk”; Mr. E. Porter some specimens of *Paniscus* caught in Newbold Wood, near Lincoln; Mr. Jones a female *Antiopa* taken at Cambridge; and a vulture (*Gyps kolii*) which had been shot near Cambridge, was also shown.

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The above Society held their half-yearly exhibition on Wednesday at the Coffee Tavern, New-road, Woolwich. The visitors who attended were much interested in the various exhibits, of which the following were the most noticeable:—Mr. B. L. Nussey, 5 cabinet drawers of British butterflies containing some splendid series of good species; Mr. Allbuary, a good collection of preserved larvæ which were very natural and life-like. Mr. Allbuary also exhibited series of British diurni and nocturni; Rev. J. W. Horsley showed a large collection of land and fresh-water shells, among which some very rare specimens were noticed; Mr. A. Old was well to the front again with a remarkable collection of skulls of various animals, enormous lizard skins wings of albatross, a lamb with eight legs, two families of live vipers and slow worms, and a large number of other zoological and geological specimens too numerous to mention; Mr. Poore had a very good selection of land and fresh-water shells, the mounting of which was very much admired, also some fine living grass snakes and a number of eggs; Mr. H. Broughton had British and foreign lepidoptera; Mr. Potter some very large specimens of water beetles and other aquatic curiosities; Mr. Webb, snakes skins, fossils and seeds from Burmah; Mr. W. Broughton, British and foreign lepidoptera; Mr. Woodward had some neat frames of lepidoptera and a collection of poisons, seeds and minerals; Mr. Wilson exhibited a portion of a fossil horn found when digging the foundation of an office in the Royal Arsenal. A naturalist from the North of England, Mr. Fieldhouse, gave a microscopic display of a number of interesting objects, and assisted greatly towards the success of the affair. A vote of thanks to Mr. Fieldhouse concluded the proceedings.

LAMBETH FIELD CLUB.—October 16: A very successful meeting was held at the Society's rooms, Newington Butts, S. E. The following specimens were exhibited:—The very frequent fungus *Coprinus comatus*, from Kensington Gardens (this species is edible when young, makes good ketchup when older, and furnishes a black liquid as it decays which can be used as ink); a frog (*Pelobates fuscus*) from France, and an unknown snake of the genus *Tropidonotus*, (to which our grass snake belongs) from Germany; also a large number of fruits and seeds illustrating the

instructive discourse given by Mr. Charles S. Cooper on the subject, in the course of which he pointed out the necessary struggle for existence which goes on among plants, especially at the commencement of their career, and which had led to the development of various structures either serving to protect the seed from its enemies or to carry it to some distance from the parent plant, and, in a few cases, even to bury it in the earth.

November 4: At the meeting held on this date Mr. W. B. Baskerville delivered a very entertaining lecture entitled "Geography and Civilisation," which he said was practically a continuation of a former lecture he had given before the Club on an allied subject.* He had then shown the connection that necessarily existed between the two sciences of geography and geology, and he would now proceed to show the relations between the former science and history. The present names of places often had a most interesting origin, though to most people they were meaningless. In many cases they revealed the nature of the former inhabitants of a district; thus, in our own country certain places had names terminated by the monosyllable "by," as Appleby, Derby, etc., and this termination was pure Danish and of course pointed to the former occupation of the land by the Danes. Other places possessed names that had been originally given by Saxon rulers, but had become more or less corrupted, subsequently; such as Dereward, in the Fens, (now Deerworth), Aston and Stanford (now Stamford.) The dialect of a people often gave a clue to their history; that of the people of Cumberland, for instance, was decidedly Danish. Between Hungary and Finland there were some 600 miles; nevertheless, the inhabitants of each of these places had a common language. This was explained by the fact that the two peoples had had their origin in an Asiatic race, which, migrating to Europe, had split up, one division going north to form the modern Finns and the other continuing westward and giving rise to the Hungarians. The lecturer went on to show how the frontier-lines on our maps were often quite modern, as the present one between Russia and Turkey. Strasburg and Kehl, towns opposite one another on the Rhine, and now belonging to Germany, were, 200 years ago, the property of France and Prussia respectively. As time went on, frontiers were shifted and fresh land appropriated, and it was manifestly important that those who had such matters in their hands, should have a good knowledge of the geographical features of the countries involved. As an illustration, the lecturer referred to the frontier which had been laid down between the United States and Canada by Lord Ashburton in 1842; for this boundary, though it was "all very well" for the people of the U.S., was most disadvantageous for the Canadians. Had Lord Ashburton

* *Naturalists' Journal* Vol I, page 68.

been better acquainted with the geography of the country, this mistake would never have been made. After showing how geography and history should be well attended to, by those engaged in dividing a country into political districts, the lecturer concluded by remarking upon the influence any given place had on its inhabitants' character. Dwellers in the lone and silent fastnesses of the mountains, were prone to superstitious ideas, and they were also, of course, the best mountaineers. These characters tended to become less marked as roads and railways spread over the land. Seaboard towns produced seafaring men, as would be at once evident on consulting Fuller's "Worthies," and by the fact especially, that, Plymouth had given us the three heroes, Drake, Frobisher and Raleigh.

At the meeting on November 20th, an illustrated paper, on "Tin and Lead" will be read by the same gentleman, and on December 4th, Mr. G. Masters will lecture on "Our Garden Flowers."

Erratum.—In the report of Mr. E. Step's lecture on toadstools, in the November No., the lecturer was stated to have warned his audience against buying mushrooms whose gills had turned black, as they might under these circumstances prove dangerous. This warning, however, was only intended to apply to cases where the mushrooms had been bruised and broken up and rendered almost unrecognisable.

RURAL NOTES AND OBSERVATIONS.

ROYSTON, CAMBS.

October 20th: Although we have had but few birds passing over, a common Tern of this season managed to find its way here and was picked up alive in a very exhausted condition.

As I have previously remarked this is a curious season, or one may almost call it a double season, as so many things have made a second growth, and produced fruit and flowers. I picked some of the common wild violets this morning.

October 21st: I have been a bee-keeper for a great many years, but have no recollection of seeing drones so late as this. I noticed a great commotion at the hives, and to my surprise, I found the bees were turning out the drones.

The Royston or Hooded Crows arrived to-day, three days later than usual.

October 27th: More butterflies about this morning than I have seen for a long time; they are like many other things—rather out of season.

October 30th: Field-fares first seen in this locality.

Nov. 1st: A small or pigmean egg of the Red-legged Partridge

as given to me this morning; it is about the size of a robin's egg and beautifully coloured, it has a greenish-brown ground, with dark brown spots.

Nov. 10th: We have a most unusual number of larks in our fields, and larger flocks of sparrows I never saw. It is very curious the way in which the sparrows leave the gardens and streets at this season, and collect in large flocks to feed in the stubbles, giving the farmers a good turn in picking up large quantities of small seeds and insects for the corn they destroyed before and during the harvest. The tenth of November is a curious time to finish harvest, nevertheless, barley in very fair condition and quality was carried here to-day.—RAMBLER. Nov. 14th, 1893.

FIFESHIRE.

In this district the season has been a remarkably early one, harvesting operations having been finished about a month ago. Last year we commenced to cut the corn on Sept. 15th., this year we finished on the 15th—exactly one month earlier. The potato lifting is now well advanced, the crop is very good as a rule, the later varieties being sound and large, but most of the earlier ones are badly diseased. Most of the farmers in Fife, have secured a good second crop of hay, being fully as bulky as the first, and secured in excellent condition. Roses are still in full bloom, and other buds coming forward. Strawberries were gathered at Markinch last week.

Nearly, if not all of our summer migrants have left us, the swallows being last seen here, on the 25th of Sept. The Martin, or window-swallow, being rather numerous this year; the sand-martin rare. Owing to the dry summer, rabbits have increased enormously; hares are fairly numerous; partridges scarce, perhaps owing to the large number of magpies now in this quarter, I have counted as many as nineteen together, however two, three, and five are the numbers usually met with. Grouse are found in fair numbers, being confined to the Lomonds and Fentsmoor, although I have shot stray birds in moorish land.

Oct. 5th: Noticed flocks of wild geese, the first time for this season; from Oct. to Jan., they may be seen in large flocks flying south in the morning, and back north in the evening. Sometimes they rest in our fields, when they do a good deal of damage to the young wheat. They are also very fond of potatoes. I have kept a pair of them—pink footed geese (*Anser Brachyrhynchus*)—since March this year, in confinement, and they are now very tame.—WILLIAM BERWICK, STRAVITHIE, October 9th.

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*)

LATE NESTING OF THE RINGDOVE.

On October 20th, I found at Radley, near Oxford, a wood-pigeon's nest, built in a limetree, in which were two healthy young

birds a few days old. Is this not exceedingly late for a wood-pigeon to be nesting? I have never heard of one nesting so late before.—D. G. BRISTOWE.

A CRANE IN SUFFOLK.

The *Eastern Daily Press* of about a week ago, states, that a very fine male Crane (*Grus cinerea*) has recently been shot on the low-lying marshland of Benacre, Suffolk. It was sent for preservation to Mr. Bunn of Lowestoft.—W. H. M. ANDREWS, COLNEY, NORWICH, Nov. 14th.

EXOTIC MOTHS IN NOTTINGHAMSHIRE.

A naturalist friend of mine, has lately sent me coloured drawings of two very large species of moths, which during the hot weather have been seen in considerable numbers, flying about in various places in Nottinghamshire, one of which I at once recognized as the Lunar moth (*Actias Luna*),* an insect with swallow-tail wings of a beautiful pale green, the other being the beautiful *Telesa Polyphemus*, the American silk moth, an insect which has been reared on an extensive scale in America. The Caterpillar, which feeds upon willow foliage, produces a kind of white silk of a valuable kind. No doubt the pupæ of these insects found their way to this country among the oak timber which they were laid up amongst, the warm temperature which has this year characterized our country, having been favourable for inducing the insects to emerge from the pupæ.—JAMES E. WHITING, HAMPSTEAD, N.W.

A CURIOSITY.

I had the pleasure last month of examining a common domestic duck, reared this summer, which has no webbed feet or membrane of any sort joining the toes. The toes are nicely serrated, however, and have a very slight margin of fleshy skin along each side, this apparently enabling it to swim to some extent, but nothing compared to the rest. The flight feathers of the wings, also, are growing perpendicularly from the sides of the bird. Have any of your readers known of a similar occurrence, and can they give any information as to the cause.

Arbroath.

CAMARADE DE NATURE.

THE AQUARIUM.

Will some reader kindly inform me, how I am to keep the glass of my aquarium from getting covered with a green coating, although the water remains perfectly clear? I do not change it more than once in about five weeks. Can I get some snails that would eat away the slime, and thus keep the glass clean? My fish are healthy!—E. A. KEMP, *Yeovil*.

THE PREPARATION OF SKINS.

I have the skin of a small stoat and also that of a mole; they have both been treated with alum and are therefore quite stiff and

* An Indian species.—ED.

hard. Can any reader tell me an easy way of making them soft and like leather?---C. R.

TO CORRESPONDENTS.

J. T. N., DEAL.—Thanks for good wishes. Interesting notes always acceptable. It is to be feared that we have seen the last of "Science Gossip."

Miss L. E., CATERHAM.—Many thanks for the notes which may be of use for a future edition.

É. H. B., LUDLOW.—Arrived too late for Nov. number.

A NEW circular of the *N.J.*, is now ready, and we shall be glad to forward a bundle to any reader who will distribute same among his friends. If every recipient of one of these circulars, would send it on to a friend, we should soon be able to accomplish many contemplated improvements in this magazine, besides giving more frequent illustrations.

AS AN INDUCEMENT to our more enthusiastic readers we offer to forward a copy of Mr. Swann's "Birds of London," to each one who can obtain three new subscribers for the coming year. Each remittance of 7/6 must be sent to this office not later than January 8th, and an acknowledgement, together with a copy of the book, will be forwarded on receipt.

BOOK NOTES.

TO THE remarks in our last issue concerning Mr. Durrant's new magazine,† we have but little to add. The first issue is well printed and carefully got up and contains a good selection of articles upon various subjects, most of them being in a vein calculated to please the tastes of the Nature Lover.

MR. E. W. SWANTON sends us two lists published under the auspices of the Wincanton Field Club, and compiled by himself; one deals with the birds observed in the neighbourhood of Wincanton, Somerset, while the other comprises a list of Mollusca collected in the same district; both show a tolerably complete list of species.

FROM our sometime contributor, Mr. H. T. Booth, comes a circular of a new monthly for collectors, an advt. of which will be seen elsewhere. The new venture will be known as the "Collectors' Monthly" and will apparently be similar to the *late American periodical* of that name.

PERIODICALS, &c., RECEIVED.—"The Conchologist" (December quarter); "The Naturalist" (November); "Entomologist's Record" (October and November); "Sussex and Hants Naturalist" (November); "Amateur Naturalist" (November); also "The Western Gazette," "Feathered World," "Fur and Feather," "Exchange and Mart," "Mercury," etc.

† *The Nature Lover.* Edited by H. Durrant. (London: Elliot Stock, 1/-.)



TO COLLECTORS!—Send two half-penny stamps for prospectus and specimen copy of a new *Monthly* for collectors—A really interesting, bright and readable monthly budget of Notes and News for all who are interested in birds and insects. Remember to send two halfpenny stamps for particulars and specimen copy. Address.—Manager, “C. M.” 38a, Upperne Road, Chelsea, London, s. w.

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EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

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PRICE 2d.

THE GLASTONBURY CRANNOG.

By E. W. SWANTON.

WITH the discovery of this Crannog, the name of Mr. A. Bulleid will ever be inseparably connected as the discoverer, and also that of Mr. Edward Bath, as the munificent donor to the Glastonbury Antiquarian Society of the five acres of land which contain the sites of all the Crannogs.

When the Wincanton Field Club visited it in September last, the work of excavation was still being carried on under the superintendence of Mr. Bulleid, the cost being defrayed by public subscription.

The field contains about sixty low circular mounds, from twenty to thirty feet in diameter, and raised from one to two feet above the surrounding level ground. The area covered is about five acres, and situated nearly in the centre of the moor between Glastonbury and Godney. The whole of the low-lying pasture land which surrounds Glastonbury, was—at the time of the occupation of this village—for the most part a great swamp, perhaps in places thickly wooded. At intervals there were large meres or lakes which increased in area during the winter rains. Mere Pool (giving the name to the village of Mere), in 1540, was five miles in circumference, and no doubt in earlier ages it extended as far as the village.

In the construction of a mound there was first made a platform of timber and brushwood placed on the surface of the soft peat *, and kept in place by small piles of wood, two or three feet in

* The peat contains many land and freshwater shells in a sub-fossilised condition including *Planorbis umbilicatus*, *Pisidium amnicum* *Bythinia tentaculata*, *B. leachii*, and *Valvata piscinalis*.

length, bent over at the top, and chiefly made of alder. In connection with this are large oak beams having mortice holes filled with oak piles. The timber brushwood of this platform now only averages about eighteen inches in depth, but originally it must have been much thicker, as it is decayed and pressed together. On the platform circular mounds of clay were placed; these consist of layers, one above the other, with intervening thin layers of decayed wood and charcoal. The number of layers vary from two to five, and they are from six inches to about two feet in thickness at the centre, gradually thinning out towards the edge. Each layer of clay, with another of charcoal and wood, represents the distinct floor of a dwelling. In the centre of a mound are found the remains of rude hearths: as a rule there is one for each layer of clay. They are sometimes composed of a few rough slabs of stones, but more frequently the fires appear to have been made on the bare clay.

Of the dwellings themselves there is nothing left to tell us of their size or shape, but there is evidence of their having been constructed of wattle and split timber, the crevices between the wood being filled up with clay. A quantity of this clay has been dug up with the wattle or timber marks on one side, and very distinct impressions of the fingers that had pressed it into position, on the other. The clay was probably baked hard when the huts were destroyed by fire, the obvious fate of many of them.

As far as it is known at present, the village was Pre-Roman, as nothing has been found which shows traces of Roman influence; and it was probably occupied during the Celtic Period. The objects dug up have been numerous and extremely interesting, and are all on view in the Glastonbury Museum. Of pottery there are many fragments, some of which have been partially reconstructed, and I believe one vessel has been completely restored. This pottery is of a coarse hard make, and of dark colour, but some of the finer and better made pieces bear incised patterns showing some slight artistic skill and taste.

Of metal objects the bronze are the most important, including a fine bowl of some five inches in diameter, and nearly that in height. This bowl was cracked, and showed traces of having been riveted together. Two finger rings and five fibulae or brooches, one or two of the latter are very similar to our modern safety pins, and are beautifully made. Many spindle whorls and looms show that weaving and spinning were both carried on to no small extent. Some of the needles used (all made of bone), part of a shuttle, and combs for carding wool have also been found.

No weapons have been discovered, excepting what might have been an iron spear head, probably used in the chase, as the bones of both the wild deer and boar are plentiful. A number of small pellets or sling stones of baked clay, the size of a small hen's egg; show that wild fowl abounded, and were obtained for food. There

have also been dug up pieces of Kimmeridge Shale, which have evidently been worked in a lathe; a jet ring, two or three glass rings, lead weights used in fishing, and bones of fox, beaver, sheep, pigs, and birds.

A boat was found by Mr. Bulleid *near* the site of the village. It is about seventeen feet in length, flat bottomed and hollowed out of a single piece of timber. It is now in the Museum with the other finds, but has suffered greatly from the effect of the dry weather, and to prevent its falling to pieces is now banded with iron.

The boat shows the inhabitants to have been industrious workers in wood. The prevalence of sheep and pig bones, also beans, wheat, and rye, prove that they were farmers. They had also some knowledge of working in metals, bronze and iron being used for making nails, knives, saws, and other implements, examples of which have been found, with the crucibles used for melting the metal. In one of the mounds was found what appears to be the site and remains of a small furnace, and near it a large funnel, made of baked clay, through which molten lead might have been poured into moulds.

The almost total absence of war-like weapons and the nature of the finds tend to show that the inhabitants led peaceful and industrious lives, and were not so savage and warlike as many of our historians portray the Ancient Britons to have been. No human remains have been discovered, doubtless they buried their dead on the high ground, i.e. on the surrounding hills as was customary with the lake-dwelling tribes. The result of the excavations up to date, show that the village was destroyed by fire, probably by an invading tribe.

The discovery of this Lake Dwelling or crannog adds yet another chapter to the historical lore of quaint old Glastonbury.

A BUTTERFLY'S WINGS.

By the REV. HILDERIC FRIEND, F.L.S., Author of "Flowers and Flower Lore," etc.

CHAPTER I.

QUITE UNEXPECTED !

It was eventide. The day now past had been crowded with duties. These demanded earnest thought, while they served as a fillip to my mental powers. At last the task was accomplished the work was over, the duty laid aside. I withdrew, with a feeling of intense relief and pleasure, to my snug retreat. Once inside the

study, the curtains were drawn, the fire stirred, the easy chair pulled forward, and every preparation completed for the much needed rest. For half an hour, at least, I could be perfectly quiet. The repose which I had so eagerly anticipated had been well earned, and would be proportionately sweet. To retire to my bed-chamber would have been worse than useless. The brain must be soothed. I must spend a little time in shutting off the mental steam which the fire within my brain, rapidly burning and constantly fed the live-long day, had generated. Perhaps I could as usual, spend a little time with one of my favourite authors. There were, around my study walls, full store of much-loved books of all kinds—Travels in far distant lands, reminders of my experiences in the Far East, in the days when my locks were darker and my beard was shorter—works on languages, dead and living, which I never wearied of conning—choice biographies by Boswell, after Boswell, and unlike Boswell—poets, especially those of the charming Lakeland in which my tent was pitched—science in great plenty, from Pliny's *Natural History* downwards—and, to mention no more, goodly tomes on the lightest and best of all sciences, the science of Religion.

For special reasons I had recommenced the study of the lives and writings of the noble men who, at the beginning of this century, made the Lake District a centre of unique attractiveness and interest. I could revert to Southey, Coleridge, De Quincey, or Wordsworth at any moment, no matter how fatigued the mind or body might feel, and be sure of instant refreshment. At this moment certainly no society could be more congenial. I therefore reached down the volumes which I needed, prepared pencil and note paper for making the usual memoranda and references, and seated myself before the fire. All was calm. The children had retired to rest; the ladies were busy with quiet occupations in their own apartments. There was nothing to disturb my reveries, or prevent me, if so disposed, indulging my fancy to the full.

Hark! Did I hear the sound of voices in the vestibule? Were those after-sounds the footfall of the servant in the hall? A conversation seemed to be in progress, a door opened and closed, so I fancied at least, and I was about to solve the problem in my mind and proceed. "Someone, no doubt, to see the ladies. A late caller to arrange for a bazaar or charity tea. Very well it is no one to see me. What answer could I give, what excuse would it be possible to make if someone really wanted an interview on business? But why think of this? My hour's rest will certainly not now be broken, nor my peace of mind disturbed."

Thus I reasoned in a mechanical kind of way. It was all the work of a moment, for the next instant I had shouted "Come in!" The servant, I thought, had tapped at my door. Looking round curiously, to ascertain who had knocked, I saw the maid standing by, bearing a tray. "A number of gentlemen have

called, Sir ! They begged me to apologise to you for coming at this late hour, and regretted that they had not brought their cards. When I asked if they would kindly give their names I found they spoke in some foreign tongue, then each took a book from his coat pocket. 'Give these to your master,' said one of them who could speak English. Tell him the authors of these works are desirous of speaking with him.' He added, Sir, that you would know their names when you saw these volumes." The authors desire to see me ! They speaking foreign tongues ! Was it a hoax, or was I dreaming ? I looked at the books. They varied in size, age, title and appearance. At bottom lay a leather-bound folio, printed in Latin and Greek, and bearing the title of *Historia Plantarum*. Next a vellum quarto with the words *Systema Natura* met my eye. Then a small octavo in cloth entitled *Natural Theology*. After this my eye alighted on the words *Origin of Species*, and finally to crown the whole came a beautiful little volume of poems. These titles I had finished reading while the servant was telling her story, and at once I exclaimed—"The authors of these splendid volumes wish to spend an hour in my society ! What an unspeakable honour. Passing strange it is too, for they have all joined the great majority. Push back the table, Susan, draw up the chairs, put the kettle on by and bye and be ready to do the necessary honours, and now, shew the gentlemen, with every mark of courtesy and respect, into my retreat."

Thoughts, words, actions, followed each other in quick succession, and within a few moments of their appearing at my door the gentlemen who are about to be introduced were within the walls of my sanctum. "I am delighted to be thus honoured, gentlemen !" I exclaimed as I rose to my feet to grasp the extended hand of the first, and then of the other distinguished visitors, At a glance I could tell who they were, and attach to each his rightful name, for their portraits had been familiar to me for years. However, I was relieved from all embarrassment by the timely remarks of one who wore the garb of an English clergyman, and thus addressed me. "We seem scarcely to be strangers, Sir, for we have lived and laboured in the same city, and for the selfsame Master. I have observed once and again that you have stood fondly by my tablet in the Cathedral at Carlisle, and have brought more than one of your friends to view the spot, and examine the beautiful pulpit which loving hands have chased and erected to my memory." It was, as the reader will have recognized, William Paley, the well known author of *Natural Theology*, who was acting the part of spokesman. "I believe," he continued, "that you will feel quite as much at home with my honoured and worthy friends, whom I have the pleasure to introduce. Charles Darwin's name, is a household word wherever science is cultivated—this is the author of *The Origin of Species*, and *The*

Descent of Man." I clasped his hand, speechless, overcome with emotion. The Archdeacon continued,—“William Wordsworth was born within a stone's throw of this spot. I see you have a photograph of his birthplace here, and his memoir and writings lie around me. This is the author of *The Excursion & The Prelude.*” Again a hearty handshake, amid “thoughts which lie too deep” for words.

“I observe that for years past, you have been a Fellow of the Society, which bears the name of the noble Swede, who, last year hundred stood unrivalled among scientists. Allow me to introduce to you Dr. C. Linnaeus. Lastly, sir, I have the joy to present to you, a splendid type of the old-world nature lovers. Theophrastus, as you are aware, is a noble Greek. I observe that you have read his works, and written in his praise in some articles you have penned, and when it was known that we purposed paying you a visit, he begged to be allowed to join our company. Now, sir, we have all been formally presented, and I trust you will pardon our intrusion.”

So soon as I was able to recover my self-control, I bid my welcome and honoured guests be seated, thanked them for their kindness in condescending to pay me a visit, and assured them that no pleasure could be greater. I apologized for my inability to offer them a cigar, as I had never learned the art of smoking, and was not a little comforted when I heard them declare that life would be worth living without the fragrant weed, and that in Elysium such a weakness was never indulged in! They refused to endorse the verdict passed by Dalton upon Sir Humphrey Davy—“The principal failing in his character as a philosopher is, that he does not smoke.”

There was a moment's lull in the conversation. I gazed proudly round upon my guests, and then remarked—“I am sure, Sirs, that you will desire to spend the little time we have together, in such wise, that profit may mingle with pleasure. It happens, that I have this day promised to write an Essay on THE BUTTERFLY. I am aware that each of you can give me some hints which will be helpful. Have you any objection to a symposium on this subject?

A smile seemed to suffuse each animated countenance, and there was a simultaneous rubbing of the hands, as if to give expression to the feeling of pleasure and approbation with which my proposal was met.

“For my part,” said the poet, “I shall be delighted to tell how in our youthful days, within a stone's cast from this very spot

My sister Emmeline and I
Together chased the butterfly.

From the stand-point of the poet, I shall be happy indeed if I can add my contribution.”

"If you will not think it out of place," added Mr. Darwin, "I will endeavour to treat the subject in the light of the latest scientific theory—the theory I mean of Natural Selection."

"Very good," chimed in the learned archdeacon, "I am not at all alarmed, as some good people are at the 'new-fangled' notions of my scientific friend: but for the special guidance, help, and comfort, of those who are in danger of losing their faith in God, I shall take as my theme the evidences of design supplied by the study of a butterfly's wing."

"All this is excellent," remarked the erudite Swede, "but in my day we regarded classification as the very soul of science. My worthy successors, Paley and Darwin, may treat the subject as Theologians or evolutionists, but I shall confine my remarks to the position which the butterfly holds in the System of Nature."

"Science was in its swaddling bands, gentlemen, when I first fell in love with nature. We Greeks (it was Theophrastus speaking) were of a poetic, imaginative, and perhaps mystical turn of mind. We were fond of symbol, analogue, and simile. What we saw in nature we were wont to use as type of something in other realms. We spiritualized, idealized, sometimes may be dreamed. If, however, your moderns have not lost touch with us; if you deem it worth your while to go back to the infancy of the human race, I shall be most happy to show how in reality your science, religion, and poetry, are all more or less the legitimate, direct, and necessary off-spring and outcome of the Grecian mind. Permit me to treat the butterfly symbolically."

It remained for me simply to act as amanuensis, or secretary of this society of Savants, and while they poured forth their treasures of learning, I listened and wrote. It was, however, at my suggestion agreed, that if each speaker would first give us a brief résumé of his life and times, we should be able the better to understand how it happened that each looked upon the butterfly's wings with so different an eye from the other, and we therefore spent half-an-hour on this fascinating theme. We will now, listen to Theophrastus, Linnæus, Paley, Darwin, and Wordsworth, as how they came to be interested, in their own particular way, in the subject of this paper.

HINTS FOR THE MONTH.

LEPIDOPTERA.

Hybernia rupicapraria may be seen flying at dusk by the sides of hedges, and if the weather be mild. *H. progemmaria* and *H. leucophearia* will make their appearance towards the end of the month, and if in the course of January we get one or two of the

spring-like days we often have even so early in the year as this, hyberinated moths, such as *Scopelosoma satellitia*, will fly about in the evening or may be found resting in the daytime.

Stibia anomala and other larvæ which feed on grass, many now be sought after by those desiring to breed the moths. The caterpillars of *Hepialus humuli* and *H. lupulinus* are often turned up where gardening operations are going on and should be transferred to flower pots, half filled with earth, and supplied with fresh roots if bred specimens of these common moths be wanted by beginners.

The micro-lepidopterist finds more employment now than those who confine their attentions to the micros, and *Taleporia pseudobombycella* in a long and slender case on lichens, *Parasia lappella* in burdock seeds, *Elachista rufocinerea* in leaves of *Holcus mollis*, *Coleophora albitalrella* in a dark brown case on ground ivy, *Adela de Geerella* on wood anemone. *Gelechia affinella* in moss, on old walls, *G. tricolorella* in leaves and shoots of *Stellaria holostea*, and *Tischeria marginata* mining bramble leaves, are only a few of the micro larvæ to be found this month and up to March. Tortricine larvæ, as well as tineites feed in the winter and oak galls should be collected by those desiring to breed *Coccyx splendidulana* and *Heusimene fimbriana*, teasel heads for *Antithesia gentianana* and *Eupæcilia roseana*, and thistle stems for *Halona scutulana*.—A. H. WATERS.

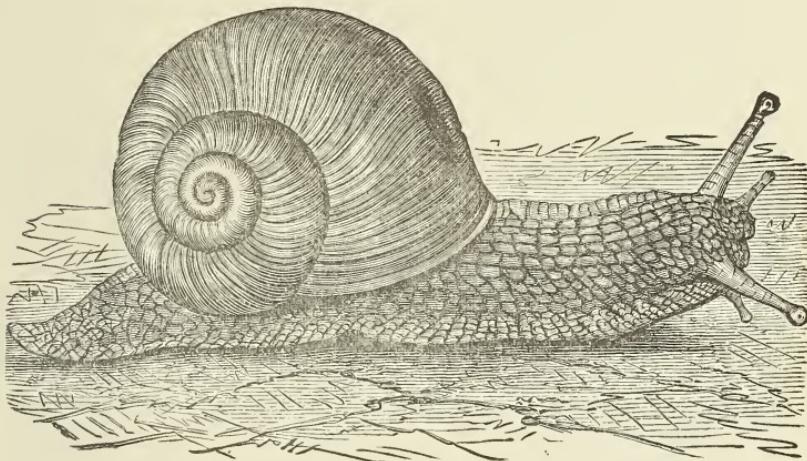
COLEOPTERA.

Tuft-cutting will be found very productive this month and in fact all through the winter ; the Coleopterist will require a strong knife and a newspaper for this work. Tufts of grass growing in marshy places in woods and those growing on the borders of ponds and ditches are usually the most productive ; they should be cut off close to the roots and pulled to pieces over a newspaper. It is astonishing how many beetles will sometimes be found in a single tuft ; I have, on more than one occasion, counted as many as a hundred on my paper at one time ; solitary tufts, growing in open spaces, are sometimes well worth cutting. Moss is also a good method of collecting at this time of the year, and sometimes produces great varieties ; it should be pulled to pieces *carefully* over the paper ; that which grows in sheltered places in woods, on the borders of paths, and on sandy banks is usnally the best kind to work.—A. FORD.

CONCHOLOGY.

Many species are in activity this month. *Helix itala*, and *H. virgata* may be found in sheltered situations, and *Helix cantiana* occurs in old chalk pits throughout the winter. *Helix rotundata*, and *H. rufescens* occur under stones in favourable localities. *Helix hispida*, *Hyalinia alliaria*, *Hy. cellaria*, *Hy. nitidula*, *Cochlicopa*

lubrica, *Vitrina pellucida*, *Clausilia laminata*, and *Bulimus obscurus* under heaps of decaying leaves in woods. The larger Helices, such as *Helix pomatia* and *Helix aspersa* must be looked for in their hibernating retreats. *Helix aspersa* loves holes in old walls and tree stumps, and is gregarious. *Helix hortensis* and others may be obtained from hedge banks by digging; but a spell of mild weather will tempt them to emerge. On January 29th, 1892 I observed in mild weather several *H. hortensis* crawling in a hedge row at Wychling, Kent.



Helix pomatia (The Roman Snail.)

Bulimus montanus sometimes passes the winter in the dead hollow stalks of the wild parsley, and other plants.—E. W. SWANTON, BRATTON ST. MAUR.

BOTANY.

I have seen the following plants on flower in the first week in January:—*Capsella bursa-pastoria*, *Stellaria media*, *Malva sylvestris*, *Leontodon taraxacum* *Senecio vulgaris*, *S. Jacobaei*, *Bellis perennis*, *Lamium album* and *L. purpureum*. But the only occupation for the botanist now, beyond observing what plants are hardy enough to defy the winter's frost, is to look after mosses and lichens.—A. H. WATERS.

MOLLUSCA.

Vertigo edentula in Somerset.—This local species occurs, though sparingly, at Ellescombe Wood, near Wincanton. I do not think it has been noticed in the county prior to my finding it in the above locality. *Helix aculeata*, *H. fusca*, *Hyalinia fulva*, *Hy-*

glabra; *Limax maximus*, and *L. marginatus* also occur within a radius of two miles of the above locality. *Bulimus montanus* abounds on the hills around Milton Clevedon. I am willing to give local shells for any information relating to the Molluscan Fauna of the county, principally that of South Somerset.—E. W. SWANTON, *Bratton St. Maur, Wincanton.*

THE BIRDS OF CAMBRIDGESHIRE.

By Albert H. Waters, B.A.

(Continued from page 68.)

The Blackcap (*Sylvia atricapilla*) is a summer visitant, arriving in the beginning of May and leaving us early in September, but stray individuals have been seen in the winter, although rarely. I have not observed any particular variation in the plumage. The eggs are not constant to size and, as I find them, are of a pale reddish brown or flesh colour dappled with deeper brown and spotted with brown. I have never found here the variety with a pale greenish-white ground colour. The Garden Warbler (*Sylvia hortensis*) also nests in this county. I see it here early in April gliding like a mouse among the bushes. It is very fond of building in thick bushes but sometimes chooses the thick growth of ivy which covers so many of the old walls about here. In the more open parts of the county it builds its loosely constructed nest among the tall grass or in a rank bed of nettles. All the eggs I have found have been creamy white spotted with ash grey and olive brown.

The White-throat (*Sylvia cinerea*) is a common summer visitant and this good friend of the gardener and the fruit grower flits about the orchards from about the second week in April till the falling autumn leaves warn it to depart. The Lesser White-throat (*Sylvia curruca*) is also a summer migrant and, like the Greater White-throat, nests here.

The Nightingale (*Daulias lucinias*) visits the county in April and I have often heard its delicious music when out mothing at night; music which has made me think lightly of the petty jealousies and ambitions of earth as I listened entranced to its soul-stirring warble. Strange it is that a little bird like this has such power to charm men's minds; strange that such a wonderful flow of melody should proceed from one tiny throat! Sometimes I have been where two or more of these kings of songsters have enthroned themselves, high up in the branches of neighbouring trees and have had an illustration of Coleridge's well known lines :

“Far and near
In wood and thicket, over the wide grove
They answer and provoke each other’s songs
With skirmish and capricious passagings
And murmurs musical, and swift · jug, jug,’
And one low piping sound more sweet than all
Stirring the air with such an harmony
That should you close your eyes you might, almost
Forget it was not day.”

Their rivalry is not confined to trying to out-sing one another for however heavenly their song may be they are by no means of a celestial disposition, but are, on the contrary, very jealous birds and one pair will not suffer another pair to be in their neighbourhood, but the stronger couple will harass the weaker until they have driven the interlopers away. They will not suffer even their own young ones to be in the vicinity but drive them away from the neighbourhood of the nest as soon as they are fully fledged.

All the eggs I have taken have been from deserted nests (for nightingales will abandon their homes on the smallest provocation). There has not been much variation in their colour; most have been olive brown with a greenish tint when fresh, but some have occurred with green mottlings and others tinged with greyish blue but I have not found these tints stable and mine have always turned olive brown after they have been some time in the drawer.

The Wood Warbler (*Phylloscopus sibilatrix*) is occasionally seen in such places as Madingley Wood, Horningsea, and near Dullingham, but it is not so common as

The Willow Warbler (*Phylloscopus trochilus*) which I find numerous everywhere where I go in the county. It is a summer migrant and I see it generally about the first week in April but this year I saw a pair in Stuntney Fen on the 29th of March. I have seen varieties in which the normal olive-green of the back is replaced by pale lemon, almost white. The nest is often made in a bank by the side of a stream where the grass and rushes are growing up tall and rank. The eggs vary very much in the number of the red dots and the method of their arrangement and occasionally the spots are absent altogether and the eggs pure white. In some specimens the dots coalesce together, chiefly at the larger end, so as to form large dots.

The chiff-chaff (*Phylloscopus rufus*) is likewise a summer visitor. I saw it this year in a wood near Dullingham on the 21st of March, but it generally comes a week later. The eggs are somewhat like those of the willow warbler but have purple-brown dots instead of red ones. Rarely they are found pure white and unspotted.

(To be continued).

FIELD CLUBS AND SOCIETIES.

CAMBRIDGE ENTOMOLOGICAL SOCIETY.—The third Natural History meeting of this society was held on the 17th of November. Two Cape gannets were exhibited, these differing from the British species by having the tail and tips of the wings black. Mr. Farren exhibited some fine var. *radiata* of *lubricipeda*; the wings of some *radiata* were quite black, with yellow streaks, the thorax and body being the usual colour. Mr. E. Porter showed some *Populi* (December moth) taken at light; also *Trichura crategi* taken in August at light, as well as *G. rubricollis*, the pupæ of which he found very abundantly on L. Erne islands last March.

HASTINGS AND ST. LEONARDS NATURAL HISTORY SOCIETY.—The first meeting of the Hastings Natural History Society was held on Tursday evening at the Museum, Brassey Institute. Mr. T. H. Cole presided over a small attendance. After the Secretary had read the rules governing the Society, an interesting lecture dealing with the relations between the vegetable and animal kingdoms was given by Mr H. F. Cheshire. The lecturer illustrated his short, but clear and instructive paper, by means of drawings and experiments. At the close, a discussion ensued, it being taken up by Messrs. Connold, Clarke, and the Chairman. A vote of thanks to Mr. Cheshire and the Chairman closed the meeting.

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,—The usual fortnightly meeting of this society was held on November 22nd, at the Coffee Tavern, New-road, Woolwich, Mr. Potter presiding. Two candidates were nominated for election at the next meeting. Exhibits were made by the following members : Mr. Potter, a splendid selection of cocoons from Australia, China, India, Japan, and North America ; Mr. Allbuary a nice series of the dusky sallow moth ; Mr. Poore exhibited a number of varieties of freshwater shells, *hydrobia*, *jenkinsi*, *limnea*, *palustris*, and other rare and local varieties. Mr. Poore also gave a very interesting account of the visit of the Rev. J. W. Horsley, Mr. Dennis, and himself to Rainham, and of the specimens found there. The most pleasing incident of the meeting was the visit of an old member, Mr. B. L. Nussey, who has been in Canada during the past year. Mr. Nussey is on a business visit to England and took the opportunity of meeting his old colleagues and showing them the result of the season's work in Canada among the birds, he having a splendid collection of skins varying in size from the small humming bird to the great grey owl. Mr. Nussey described the habits of many specimens and also the mode of capture, which in some cases was not effected

without artificial means. A hearty vote of thanks to Mr. Nussey concluded the proceedings.

December 7th : Three candidates were nominated for election at the next meeting. The following exhibits were made :—Mr. Potter, shells from Australia: Mr. Albury, *B. perla* and *B. muralis*, from Deal; Mr. Wooley, a fine spotless Var. of *Menthastrum* taken at Millwall; Mr. Old, living *D. marginalis* from Plumstead Marshes, also some pond life under his microscope; Mr. Poore, a splendid var of *H. hispida* and *alba* forms of *H. rotundata* taken at Bostall Wood; Mr. Fieldhouse gave a microscopic display of wood sections.—ARTHUR C. POORE.

LAMBETH FIELD CLUB.—November 20 : At the meeting held on this date, a specimen of the fungus *Polyphorus squamosus*, measuring nearly two feet in diameter and weighing eight pounds, was exhibited. It had been obtained from an oak-tree near St. James's Park about a fortnight previously. The table was covered with various sections of woods, about which Mr. Holden discoursed to an interested assembly, and answered a great many questions put to him on the subject, which he had made a special study of. In the absence of Mr. Baskerville, the president, Mr. Masters, read some notes on tin and lead, giving a brief sketch of the discovery, properties, and fluctuations in value of the two metals. Another member exhibited a specimen of "grain tin," the metal having formed into a semi-columnar mass during the process of "fluxing"; the specimen possessed a historical interest also from having been mistaken, from its appearance, for a burglar's "jemmy" on a certain dark night, when it had been accidentally left on a table.

December 4 : The president, Mr. George Masters, gave a lecture, on the above date, entitled "Our Garden Flowers." The lecture was a mass of collected facts relating to horticulture—it bristled with them from beginning to end. The first portion dealt with ancient gardens, in history and romance. The birthplace of man had been a garden, according to the legend, and among the ancient nations gardens were held in high estimation. The old Jewish gardens were constructed for the pleasure of men, but the Greeks dedicated theirs to the gods. King Solomon, 1600 B.C., was a famous gardener, and imported many kinds of plants from foreign parts; the descendants of some of these, according to Dr. Talmage's work on Palestine, were to be found among the ruins at the present day, and nowhere else throughout the country. Then there were the "hanging gardens" of Babylon, built to relieve the monotony of the flat plains around the city, the Persian gardens, and the public gardens at Athens, in which Epicurus taught. So great was the love for flowers among the Romans, that Nero had, at one supper alone, roses to the value of £30,000. During later periods of history garden-

ing had fallen into disrepute, but was revived in this country in the middle ages by the Monks, and during the reign of Henry VIII. had become a serious study. We owed Greenwich Park, and St. James's Park in the first place to Charles II. The recently opened Waterlow Park, in the North of London, was an illustration of the old English style of gardening, with its walks, terraces, evergreen hedges, and box shrubs. One of the greatest gardeners of the last century was John Evelyn, who died in 1796. He was the author of a work called "*Sylva*," which had the honour of being the first published by the Royal Society. Another notable work on the subject of horticulture, was Loudon's "*Encyclopædia of Gardening*" the publication of which had raised a great outcry from the "classes," who objected to their favourite pursuit becoming familiar to the "masses," but the spread of such knowledge among the people had done much to improve gardening generally. The region of the Mississippi had been called "the garden of the world," but why was not very obvious. The wealth of our native flora was very great, and also very mixed, and it showed that in former geological times, Great Britain had been united to the Continent, and some of our flowers were common to both sides of the Channel. The distribution of our flora had been greatly affected by the glacial epoch. The lecturer then proceeded to describe how primitive plants had bright golden yellow flowers, which had then become modified, and their colours had ranged through white, pink, red, crimson, and purple to blue, the most highly specialised colour of all being deep blue. All this had a bearing on the origin of our garden flowers, many of which had been derived from a common ancestor. Thus the lily had given rise to more advanced descendants in every climate, including the snowdrop and the daffodil, while on the other hand, the onion and the garlic were degenerated lilies. Among flowers that had been originally imported from abroad, were the Camellia, the carnation, the heaths, and honeysuckles, the Petunia, the Virginian creeper, etc. Many garden flowers were named after their discoverers, as the Camellia, which was named after Camel, a Jesuit, and the Dahlia, after Dahl, the Swedish botanist. Others had been dedicated to celebrated personages out of compliment, while of course the name of many indicated structural peculiarities, etc. The popular names of many garden plants, were of deep interest, and were often corruptions of the originals, as in the case of the foxglove, which was once spelt "folk's glove," or fairies' glove. The pink was so called, not from its colour, but from the edges of the petals being "pinned," or notched. The rosemary had a name derived from the Latin, signifying "sea dew," and referring to the situations where it occurred. "Tulip" was a Turkish word meaning "turban." There was an intense mania for these flowers from 1634 to 1637, fabulous prices being given for their

bulbs. The lecturer related an anecdote of a man at that time who had in his garden, a black tulip, and hearing that another horticulturist had one also, he purchased it for 300 guineas and then cut it to pieces, so that his should be the only one! The lecturer concluded with references to the poets who had immortalised flowers, both wild and cultivated.

On December 18, the Society will hold a "social evening" at their rooms, St. Mary, Newington, Schools, s.e. The meeting will be partly devoted to the exchange of duplicate specimens, and the reading of the postponed paper by Mr. W. B. Baskerville on "Tin and Lead," and partly to light refreshments. The lecture on January 8, 1894, will be by Mr. Frank R. Taylor, on "A Ray of Light" (with limelight illustrations), and at the meeting on January 15, Mr. F. P. Perks will read some notes on the planet Venus.

THE PRACTICAL NATURALISTS' SOCIETY.—The Ornithological M.S. circulating magazine contains papers on "Variation in the Colour of the Plumage and Eggs of the Paridæ" and "The Winter Visitants to the Cambridgeshire Fens."

RURAL NOTES AND OBSERVATIONS.

ROYSTON, CAMBS.

November 22nd: The great storm which has just passed over has driven the sea birds inland. Gulls have been seen passing both from East to West and from West to East. During the storm on Sunday large numbers of larks were seen passing south.

November 23rd: A Little Auk (*Mergulus alle*) was picked up here, having been against the telegraph wires. There is no record of one being taken in this locality since November 1841. The force with which the bird struck the wires fractured the breast bone.

The Cormorant I mentioned in my November notes left Newark during the storm.

Thousands of sparrows are feeding on the seeds of the *Polygonum aviculare*, or Knot grass. This is a very troublesome weed and the great draught appears to have favoured its growth.

December 5th: Albino appear to be more frequently met with this season than usual. I have seen to-day a white lark and a nearly white chaffinch; also a white linnet and a white sparrow

have been seen, I believe the white linnet was caught.

A really rare bird, namely, a Mealy Redpole (*Linota linaria*) was taken alive in this locality, it is the first I have ever heard of being caught here.—RAMBLER, December 14th.

RECORDS AND OBSERVATIONS.

BIRDS.

Little Auk in Bucks.—I have had a very nice specimen of the little auk sent to me for preservation; it was found alive by a retriever dog in a field near Newport Pagnell, Bucks, on November 19th, and had evidently been driven inland by the severe storm which raged round our coasts the day before.—W. E. DAWES, Camberwell.

Cley-next-the-Sea.—November 18th: A heavy gale sprang up at 6 p. m. November, 19th: Strong N. E. wind; an immature male little gull shot, which I afterwards obtained for my collection; it was in company with another. A male stormy petrel was also shot, and a male black-tailed godwit in very fine plumage.

November 20th: A long-tailed duck seen; one little auk shot and another picked up dead; bernicle goose seen, also a little gull. The wind to-day was N W.

November 21st: Strong N.W. wind. We saw two immature turnstone—this is late for them; shot three shore larks and a snow bunting; a great northern diver we hit but did not kill. I picked up a dead puffin and also obtained a little auk for my collection.

This year the Sandwich terns were common here, Mr. Parkley receiving as many as fifteen.—W. H. M. ANDREWS, Colney, Norwich

THE WHEATEAR.

Open downs and broad sandy heaths are the favourite resorts of this pretty bluish-grey and white bird, with orange-buff breast. It seems to be very fond of the company of rabbits and sheep and to have a predilection for localities where the wild thyme grows luxuriantly. Perhaps it is on this account that its favourite resort in East Anglia when it returns from its winter migration is the extensive sandy plains of Norfolk and the northern part of Suffolk. There I have found hundreds of its nests; sometimes in an old rabbit burrow but more often by the side of a large flint stone or lump of chalk marl. It is less common in Cambridge-

shire although I have seen a good many on the uplands of the south-eastern part of the country, and this year more than ever. I have no doubt it breeds there as I have seen numbers of young birds but other duties have prevented me searching the fields in that part for its nest and I have not found it at Cambridge.—
ALBERT H. WATERS.

INSECTA.

Cossus ligniperda.—A few days ago I happened to visit a willow about a mile from Cambridge, which was blown down during the recent severe gale, and found great numbers of these larvæ in all stages of growth. One has since assumed a white apod form, distinctly segmented, which I conclude must be its hibernating garb. Can any reader tell me whether these larvæ are easy to rear?—E. PORTER, Cambridge.

Lepidoptera in the Hastings district during 1893.—I have done very little in this order during the year, most of my time being devoted to Coleoptera; in May and June, I paid a few visits to the railway embankment at Hollington, about two miles from the town, and among others took the following; *Anthocharis cardamines* males common; *Argynnis selene*, *A. euphrosyne*, both common; *Thanaos toges*, *Syriodus alveolus*, both abundant; I obtained some nice varieties of the latter including one of the rare var. *lavateræ*. Among the moths, *Zygænū trifotū* occurred in profusion and I secured some nice vars. of this including 5 in which the spots were united, forming a large blotch, while several intermediate forms occurred; it also varied in size, some being nearly twice the size of others. I managed to beat a few fine *Chelonia villica* from the undergrowth; *Euclidia glyphica* was very common, *E. mi* less so; *Phytometra ænea* turned up occasionally as also did *Pyrausta purpuralis*, *Herbula cespitatis* and many others. I only paid one evening visit to this locality and netted a long series of *Acidalia subsericeata* and a few *Conchylis stramineana*, etc. Sugar-ing in various woods in the district was decidedly a failure, the only locality where I could obtain anything was the railway embankment on the beach, near St. Leonards; in three or four visits, I took a large number of common Noctuæ including:—*Agrotis puta* (abundant) *A. suffusa*, *A. exclamationis*, *A. segetum*, *Miana furuncula* (common) *M. literosa*, *Hydræcia nictitans* (some fine vars.) *Apamia oculea* (common and variable), *Cerigo cytherea* *Noctua rubi*, *Mamestræ brassicæ*, *Tryphaena orbona*, *Hadina thalassini* *H. chenopodii* *Amphydrya tragopoginis*, etc. On the cliffs, I netted *Gnophos obscurata*, *Acidalia promutata*, *Eubolia bipunctaria*, (abundant), *Bryophila perla*, *Pterophorus trigonodactylus*, etc. In St. Helens Woods, I netted a long series of the pretty *Ephydra porata* and many common things.—A. FORD, Glen Mount, Braybrooke Road, Hastings.

Notes on Insects of 1893.—My insect capture, and observations during 1893, although far from unique, may be of some interest to the readers of the N.J. On March 5th, I took *Othin fulvipennis* among some debris near the roots of a tree in Highgate Woods. On the 8th, whilst strolling through Kensal Green, I took a specimen of *Hypera punctata* off a wooden post. Had I not been on insect hunting intent, I should not have detected it, so much did it assimilate with the post. *Musca chloris* was beginning to make its appearance. Coleoptera of the *Hydradephaga* group were plentiful enough at Willesden, but I was not prepared for the occasion. I first met the brindled beauty moth on the 15th in Pentonville Road, London; *Biston hirtaria* was very common in London throughout the season, and the females were to be seen for two or three days in the same position on the tree trunks. I took *Tenioampa gothica* at Theydon Bois on the 24th. On April 8th I visited West Drayton and met with *Andrena fulva* in plenty, also a few *Lieris brassicæ* and *Vanessa urticæ*—hyber-nated. On May 13th, I again visited West Drayton and saw several of the following: *P. brassicæ*, *L. icarus*, *E. cardamines*, *Bombus terrestris*, and *Selandria serva*. I had a specimen of that pretty beetle, *Clytus arietis*, given me by a friend who found it in the G. W. R. Stores Yard, Paddington, on the 15th. On Whit-Monday, at Henley-on-Thames, I took the spotted muslin-moth (*D. mendica*); also *Platestrum depressum*. At Epping Forest, near Chingsford, I met with *Pyrrhosoma minium* commonly, ditto *Enallagma cyathigerum*, on June 4th. *P. depressum* was very common; in attempting to secure a female I knocked her into the water; I managed, however, to induce her to clutch the net which I extended and transferred her from a watery grave to a dry reed, which she readily clasped, and left her. At Abingdon, Berks, on the 10th, I met with one *C. pamphilus*, a few *L. icarus* and *P. brassicæ*, also *V. urticæ*, commonly. *P. Phœas*, was plentiful at Epping Forest, near Theydon Bois, on August 7th. On October 1st. I met with *V. atalanta* in plenty at St. Ives, Cornwall, also a few *P. rapæ*, very much battered. On the 2nd I saw one *P. phœas* and took *Phlogophora meticulosa*, *Pararge egeria* and *P. megæra* on the road from St. Ives to Penzance. *P. phœas* was very scarce, I having only met with two individuals during my short stay in Cornwall. This insect was very common at Weymouth about a week later last year. On the 5th I met with wasps (*Vespa vulgaris*) plentifully, also *V. atalanta*, *P. egeria*, and *P. megæra* on the road which leads to Land's End and the Logan Rock from Penzance. I might mention that on this road I came across the "adder's tongue" fern (*Ophioglossum vulgatum*) quite commonly.—J. F. CORDON.

Label lists for labelling any class of Natural History specimens may be had from the office of this magazine (see advt.)

EDITORIAL NOTES.

THE Rev. Hilderic Friend, F. L. S. informs us that he will be in London the last week in January and will have one night at liberty for a lecture. Secretaries of societies may obtain particulars and terms from the lecturer, 7 Fern Bank, Cockermouth, Cumberland. We have a list of 14 lecturers (illustrated with hand-painted transparencies) any one of which Mr. Friend is prepared to deliver.

WE must not allow this issue to go to press without some slight tribute to the great scientist who has passed from our midst, and we only regret that we cannot give a more extended notice, for Professor Tyndall was in every sense of the word a teacher of the people, his writings being possessed of a lucidity and far-reaching conception that entitle him to rank with Darwin and Huxley as an exponent of that newer Science to which the latter half of our century has given birth.

By an advertisement elsewhere it will be seen that the Naturalist's Publishing Company, of Birmingham, are commencing operations as scientific booksellers. We are informed that they have a large number of natural history and scientific works in stock, a catalogue of which will be sent on application.

MR. W. P. Collins, of 6 Red Lion Square, London, w. c., sends us one of his latest catalogues of works on Microscopy and Micro-Natural History. Readers, in writing for one of these catalogues, should note that Mr. Collins has removed from his Gt. Portland St. address.

CORRESPONDENCE.

(*The Editor is not responsible for the opinions expressed by Correspondents.*)

LOCALITIES WANTED.

Can any reader inform me, where is the most likely place within reasonable distance of this part of South London, in which I could make sure of finding *Helix pomatia*, the Roman snail, and also *A. galathea*, the marbled white butterfly?—HELIX, Brixton.

THE AQUARIUM.

The "green slime" that appears on the glass of Mr. Kemp's aquarium shows that the vessel is placed in a position where it receives too much light. Myriads of microscopic spores or germs, are present in all water exposed to the air, waiting for suitable conditions under which to develop, and direct sunlight always leads to their growth and germination. This "green slime," a freshwater alga, is familiar to all who have experimented with aquaria. It may be removed by simple rubbing, say with a flannel, but is sure to re-appear if the aquarium is not shifted from its welllighted position. I do not think watersnails are of much use, though they (especially *Planorbis corneus* and *Limnaea stagnalis*) are constantly busy, rasping away at the growth with their "lingual ribbons" when kept in affected aquaria. The growth itself will not harm the fish or pollute the water, its only undesirable effect being its ultimate opacity.-F.P.P.

MUSHROOMS.

The *British Medical Journal* has recently shown that the mushroom of commerce should be eaten before the gills have darkened, unhealthy symptoms having been known to result from its being used at the later stage, so that the original statement on page 69 of the *Naturalists' Journal*, would seem to be, after all, a well warranted one.—F.P.P.

PREPARATION OF SKINS.

Your correspondent will never make the skin of the stoat and mole pliable and like leather, unless they are sent to the skin dressers, who alone know how to do it properly.—J. E. WHITING, *Hampstead*.

BOOK NOTES.

"By Moorland and Sea" † is the title of a new work, by the author of "Idylls of the Field," which has reached our hands. Mr. F. A. Knight is already considerably known to fame and the volume now before us should certainly win for him an increased popularity. We have read it through with pleasure, especially two or three chapters, and were everywhere impressed by the wealth of thought and observation possessed by the author; in fact, one finds here much of that rare spirit which sprang to life in the writings of the late Richard Jefferies. We are particularly pleased to claim Mr. Knight as a friend to the birds-nester—that is the sensible and proper-spirited bird's-nester. The illustrations (by the author) are excellent, and add much to the value of the nicely-printed volume.

We regret to learn that, owing to the ill-health of Mr. Robson, the *British Naturalist*, will be discontinued for the present.

The Field Club also has issued its last number as a separate magazine arrangements having been made for its incorporation in *Nature Notes*, which will in future be published by Mr. Elliot Stock.

Mr. W. E. Collinge's valuable quarterly, *The Conchologist*, will in future appear as the *Journal of Malacology* and will be devoted to the slugs and slug-like genera.

We regret to say, that No. 2 of *The Nature Lover*, will not be issued.

The botanical name of Rosemary, *Rosmarinus officinalis*, comes from *ros*, dew, and *marinus*, of the sea, on account of its maritime habitat, poetically implying "the dew of the ocean." There are three varieties, the green, golden striped, and silver-striped. The first is one in general cultivation. Rosemary thrives best on a poor, gravelly soil, in which there is a mixture of old mortar, or other calcareous matters. In such, or when the plants are self-raised on an old wall, they will bear our severest winters; but in a rich soil they become succulent, lose much of their aromatic nature, and perish in frost. For the green variety, the situation may be open, but the other two being tender, require to be planted beneath a south wall, or in pots, to be allowed the shelter of a greenhouse in winter. It may be propagated by cuttings and rooted slips during any of the spring months, or by layers during the summer. But the finest plants are raised from seed.

† "By Moorland and Sea," by F. A. Knight. London: Elliot Stock, Paternoster Row.

15 AUG 94



EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

SHELLS.—*P. conlecta, B. leachii, L. glutinosa*, and about 50 other land and fresh-water shells. Wanted : Lepidoptera or birds eggs,—J. W. Boult, 17 Finsbury Grove, Fountain Road, Hull.

WANTED.—British bird's eggs, side blown, one hole. Will give in exchange, British butterflies and moths, North American bird's skins, a few animal skins, also, entomologist's appliances.—Thomas Mottershaw, 11 Manchester St., Nottingham.

"Book of the Aquarium," Shirley Hibberd ; "Silkworms," Butler (young collector series); British Bird's Eggs," Atkinson (plain); "British Butterflies," Coleman (plain); "Geology for the Million" (plain); "Conchological Dictionary," Turton. Exchange for British Birds eggs, or Coleoptera.—C. Coles, 61 Barrington Rd., Brixton, S. W.

WANTED.—Offers in British or foreign shells, freshwater or marine, fossils, minerals, old coins, or stamps, for Vol. i. and ii. of the *Strand Magazine*, unbound, good and clean condition.—Thomas Edwards, Waterloo House, Coventry Street, Leicester.

FOR EXCHANGE.—"Feathered World," Nos. 131—183; "Poultry," 515-540; "Fur and Feathers," 143, 145—166; several Nos. "Search Light"; Wood's Common British Moths"; also 7/6 pair climbing-irons. Desiderata : Fossils (especially trilobites) from any system (localities wanted), natural history or geological books, and apparatus for blowing, etc., bird's eggs.—E. B. Lloyd, 11 Portland Road, London N.

WANTED.—A second-hand 10 drawer insect cabinet; must be in good condition.—A. Ford, Glen Mount, Braybrooke Road, Hastings.

WANTED.—Ova or young larvae (ova preferred) of any species of the Nymphalidae. Will do my best in return.—C. Nicholson, 202, Evering Road, London, N.E.

DUPLICATES.—*Prodromaria* (bred) *Rufa, Procellata, Blomeri, Vitalbata* (bred), *Griscolo, Stellatarum, Triangulum* (bred) *Lunosa, Affinis* (fair) *Stratiotatis, O-sparcana, Pinaria* (females) *Puta, Macilenta, Tarsipennalis*, etc.—J. Mason, Clevedon Court Lodge, Somerset.

WANTED.—Live specimens of *Helix pomatia*. Will give shells, fossils, or minerals in exchange.—C. A. Benn, Pudleston Court, Leominster.

WANTED.—Newman's British Butterflies and Moths, in one volume: will exchange birds eggs, side blown, in clutches or singles.—H. L. Wood, Old Grammar School House, Ashford, Kent.

BRITISH BIRDS' EGGS for exchange.—cormorant, kittiwake, lesser black-backed gull, guillemot, razorbill, Norfolk plover, etc. Also good lepidoptera in exchange for British birds' eggs. Send for list.—E. G. Potter, 19, Price Street, York.

BIRDS' EGGS.—Offered: eggs of twite, capercaille, raven, merlin, great grey shrike, bee-eater, eagle owl, pochard, nonpareil, ring-ouzel, crested tit, ptarmigan, &c. Wanted: hawks, shrikes, owls, great crested grebe, terns, swift, nightingale, wood wren, buzzard, plovers, gulls, and many common sorts, side blown with one hole.—J. Ellison, Steeton, Keighley.

DUPLICATES.—About 500 species of British coleoptera, all correctly named and neatly carded, including many rare and local. Desiderata: British and foreign coleoptera and foreign diurni.—A. Ford, Glen Mount, Braybrooke Rd., Hastings.

VIPERS.—Will any readers kindly send me what information they may possess as to the distribution of the Viper in Cornwall? I shall be pleased to send shells, micro-slides, books, etc. in return for spirit specimens of this reptile from any British locality or will purchase examples.—George Mason, 203, Ebury Street, Eaton Square, London

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THE SHELLS OF WYCHLING.

By E. W. SWANTON.

Athe following list contains the shells noticed at Wychling, as well as others within three miles radius of it. Wychling is seven miles from Sittingbourne, Kent, and is wholly on the chalk. The absence of streams and scarcity of ponds and pools, explains the almost total lack of freshwater species.

Limax maximus, L: Tolerably common; the variety *maculatus*, Moq., occurs at Doddington.

Limax marginatus, Mull: (L. *arborum*, B. Ch.) Common at 'Chalky Banks.'

Limax variegatus. Drap: (L. *flavus*, Auctt.) Not common. Woods at Doddington.

Agriolimax agrestis, L: Common everywhere.

Var: *nigricans*, Westrl: Doddington. Rare.

Var: *sylvatica*, Drap: Wychling.

Amalia gagates, Drap: Rare. It occurs in gardens at Wychling Rectory.

Arion empiricorum, Fir: (A. *ater*, Brit. Auctt.) Abundant. The variety *ruber*, Moq., occurs at Lenham Hill. Var: *albus* is rare, occurring only at Wychling Rectory.

Arion hortensis, Fir: Common.

Var: *rufescens*, Moq: Rare. Doddington.

Var. appr. *niger*, Moq: Wychling.

Arion subfuscus, Drap: Fairly common.

Arion fasciatus, Nillson: (*Arion circumscriptus*, Johnst, and *A. bourguignati*, Mab.) Tolerably common.

Arion celticus, Pollonera (1887): A recent addition to the British List; I have also taken it at Southampton. It is extremely

rare, occurring only at Court Lodge, Wychling. (See Review of Brit. Arionidæ, by W. E. Collinge.)

Vitrina pellucida, Mull: Abundant.

Hyalinia (Zonites) glabra, Stud: of rare occurrence. Doddington.

Hyalinia altiaria, Mull: Rare. Wychling Wood.

Hyalinia nitidula, Drap: Common.

Hyalinia radiatula, Ald: Locally abundant.

Hyalinia crystallina, Mull: Local, but not so abundant as *Hy. radiatula*. Occurs in damp situations.

Helix rotundata, Mull: Common everywhere. The variety *alba*, Moq., so beautiful and rare, is of fairly common occurrence in this district.

Helix pygmaea, Drap: Rare. Wychling Wood. Doubtless often overlooked owing to its minuteness.

Helix aculeata, Mull: Rare. Seven examples from Wychling Wood.

Helix pomatia, L: Very abundant.

Var: *albida*, Moq: is extremely rare. Two examples only from 'Chalky Banks.'

This variety is greenish-white.

Var: *brunnea*, Moq: Locally abundant. Chalky Banks only.

Helix aspersa, Muller: Common.

Var: *albo-fasciata*, Jeff: Doddington.

Var: *exalbida*, Menke: Rare. Occurs at the foot of Lenham Hill.

Var: *nigrescens*, Moq: Rare. Gardens, Doddington.

Mons: *subscalariforme*, Wlms: One example only, taken at Wychling Rectory by Mr. Neville Norton. A description of this monstrosity is given in 'Science Gossip' for 1892.

Helix nemoralis, L: Common.

Var: *castanea*, Moq: A common form.

Var: *rubella*, Moq: Ditto.

Var: *minor*, Moq: Rare. Lenham Hill.

Var: *libellula*, Risso: Common.

Var: *carnea*, R. and T.: Lenham Hill. Rare.

Var: *petiveria*, Moq: A common form.

Var: *hyalozonata*, Tylr: Rare. Lenham Hill, two specimens only.

Helix hortensis, Mull: Common.

Var: *lutea*, Moq: A common form, with B. F. 12345, 10345.

Var: *lutea-lurida*: Rare. Wychling Hill.

Var: *albina*, Moq: Rare. Doddington Hill.

Var: *coalita*, Moq: Fairly common.

Var: *arenicola*, McGill: Ditto.

Var: *sub-albida*, Loc: Common, with B. F. 12345, 00345, 12300. The B. F. 00300 rare in *H. hortensis* (so common in *H. nemoralis*) is occasionally to be met with.

Var: *minor*, Moq: Rare.

Var: *conoidea* (M. S., Swanton ?) Rare.

Helix cantiana, Mont: Common.

Var: *alba*, Colb: Not common. Wychling.

Var: *canaliculata*, Wlms: Rare. First recorded (at Wychling) by Miss Muriel Norton, and described by Dr. J. W. Williams in 'Science Gossip' for 1892.

Var: *elevata*, Wlms: Rare. First recorded (at Doddington) by Mr. J. R. Longhurst, and described by Dr. Williams in "The Conchologist" Vol. I.

Var: *rubescens*, Moq: Fairly common.

Var: *minor*, Moq: Rare. Doddington,

Var: *Gallo provincialis*, Dup: Locally abundant. A chalk pit near Lenham Hill.

Helix rufescens, Pennant: Common.

Var: *rubens*, Moq: Common.

Var: *alba*, Moq: Scarce. Doddington.

Helix hispida, L: (*H. concinna* Jefferys) Fairly common.

Var: *hispidosa*, Mousson: (*H. hispida* Jefferys) A common form.

Var: *nana*, Jeff: Rare. Chalky Banks, Wychling.

Var: *minor*, Jeff: Rare. Doddington.

Helix virgata, Da Costa: Common.

Var: *minor*, Taylor: Common.

Var: *subdeleta*, Ckd: A common form.

Var: *albicans*, Grat: Fairly common.

Var: *lineata*, Olivi: (v. *submaritima*, Jefferys) Locally abundant. Wychling.

Helix intersecta, Poiret: (*H. caperata*, Mont.) Fairly common.

Var: *alba*, Picard: Local. Torry Hill.

Var: *alternata*, Ckll: Rare. One specimen taken near the College, Doddington.

Var: *major*: Very local. Torry Hill.

Var: *unicolor*, Wlms (?): Sindaine. Not common.

Var: *obliterata*, Picard: Common.

Var: *ornata*, Picard: Somewhat scarce.

Helix itala, L: (*H. ericetorum*, Mull.) A very common species.

Var: *alba*, Charp: Common.

Var: *monozena*, Pasc: Not quite so common as *alba*.

Var: *minor*: Locally abundant. Court Lodge, Wychling.

Mons: *subscalaris*, Ckll: Is fairly abundant in a field on Court Lodge Farm, Wychling.

A variety approaching *bicolor* also occurs there.

Helix pulchella, Mull: Fairly common.

Var: *costata*, Mull: occasionally occurs with the type.

Helix lapicida, L: Common.

Buliminus obscuras, Mull: Common.

Var. *albinos*, Moq: occurs in some numbers in a hedge bank

adjoining the College, Doddington.

Pupa muscorum L: (*P. marginata*, Drap.): A common species, the variety *edentula*, Moq., occasionally occurs.

Vertigo pygmæa, Drap: Rare. Wychling.

Balea perversa, L: Very rare. Wychling.

Clausilia rugosa, Drap: Common.

Var: *albinos*, Moq: Rare. Wychling Wood; and near the College, Doddington.

Mons: *decollata*, Scott: Rare.

Clausilia rolphū, Gray: Rare. Wychling Wood only.

Clausilia laminata, Mont: Very common on beech trees in Wychling Wood, and at Chalky Banks.

Var: *albinos*, Moq: Scarce, Hedge bank, near Doddington Church.

Var: *pellucida* Jeff: Scarce. Chalky Banks.

Mons: *decollata* (M.S. Swanton ?), occasionally occurs. (With a true apical plate.) I have also an example with an abnormal development of the mouth-piece.

Cochlicopa lubrica, Mull: Very common.

The variety *hyalina*, Jeff: sometimes occurs with the type.

Cæcilioides acicula, Mull: Locally abundant, I have taken it in large numbers near Torry Hill, but always the empty and bleached shells only.

Carychium minimum, Mull: Rare. Damp situations in Wychling Wood.

Cyclostoma elegans, Mull: Very common.

The variety *ochroleuca*, Des Moulis, is of fairly common occurrence.

Sphaerium lacustre, Mull: occurs in small ponds near Wychling and Lenham.

Planorbis albus, Mull: Ponds near Wychling.

Limnaea peregra, Mull: Ponds near Lenham.

Forty-five species, and sixty-five varieties and monstrosities are enumerated, all came under my notice during a three years stay at Wychling. Other species may yet be found; the absence of *Helix cartusiana* is noticeable.

Albino forms are prevalent, twelve are given in the list.

We regret that the necessarily hasty production of the January number should have occasioned one or two slight errors in that issue. The note on *Vertigo edentula* on p. 97 should have appeared in the "Records and Observations" section instead of under "Hints for the Month." On p. 92, line 19, for lightest read highest; p. 96, line 12, for micros read macros; p. 105, line 2, for country read county; line 22, for zygænū trifotū read zygæna trifolii; etc.

A BUTTERFLY'S WINGS.

By the REV. HILDERIC FRIEND, F.L.S.

Chapter II.

OUR SYMPOSIUM.

My visitors had chosen a cold winter's night for their call. Skiddaw's height, which could be distinctly seen from my study window during the day, was covered with a gauzy veil of snow, which threatened soon to become as thick and warm as a Highland plaid. The fire blazed away in that cheery style which is familiarly associated with a frosty night. We were now enjoying its genial glow, and before settling down for the evening's business, coffee, fruit, and Christmas cheer was handed round. Amid our sipping and regaling we discoursed lightly of various matters, then, when the ice of human strangeness and diffidence was completely thawed, and the flow of animal spirits was complete, we began our self-appointed task. It was unanimously agreed that we ask Theophrastus to open our symposium. He was, by many ages, the senior, he could carry us back to a period and a nation unique in interest, and the thread of his narrative could be taken up by the next speaker with the greatest possible ease.

"You are all aware," he said, when we had gained his consent to act as leader, "you are aware that I was born of a fuller in the isle of Lesbos early in the fourth century, before your era commenced. I need make no apology for my birth, for in our day it was regarded as a crime for a man to have no trade or calling, and no one asked—What is his father? before they would associate with the son. Each man stood on his own merits. I was early sent to Athens, the Oxford of that age, the seat of learning which boasted the largest number of students famed in history. The classic haunts deeply impressed me, and my native love of knowledge stimulated me continually to out-rival my fellows in the school of Plato. After a time I became the pupil of Aristotle, than whom no finer master ever occupied the seat of the learned, or sat in the professor's chair."

I took occasion at this point to observe that his name appeared to me a very appropriate one. His elegant diction, modest, yet forceful utterance, rhythmic and melodious sentences, marked him out as a perfect master of the art of oratory. "Sir," he replied, "I would remind you that my true name is Tyrtamus. By this name was I known during boyhood and youth, and 'by it was I always designated till I had been for some while at the feet of Aristotle. He, generous soul, never fearing that he would detract

from his own honour by bestowing honour upon others, first named me Euphrastus, because he said, the gods had endowed me with more than an average fluency. Not content, however, with calling me the Fine Speaker, he presently changed the name to Theophrastus or the Divine Orator—a title which I feel myself altogether unworthy to bear. If it were possible I would relate to you some facts of interest relating to my college course, and the society in which I had the honour to move, but I must not unduly lengthen my narration lest my worthy quartette of fellow visitors should have no time for their life story."

"Is it true," I enquired, "that on one occasion, a woman undertook to write you down?" "It is true. Unfortunately the male sex is not the only one which sometimes does rash things. Leontium, the Athenian to whom you refer, was a friend of Epicurus. With the latter, I had little in common, and as our sympathies and teachings often took opposite courses, he found a doughty champion in this woman."

"We have fallen on happier times," remarked Mr. Darwin. "You will perhaps be interested to know that since the study of science on evolutionary lines came into vogue we have found many adherents and champions among the gentler sex, some of whom now rank as authors of considerable merit, while several are skilled and successful demonstrators and lecturers in our colleges and laboratories."

"I have read your memoirs by Diogenes Laertius," remarked Paley, "and observe that you wrote many other works besides those which my friend here has on his shelves."

"It is true," again replied the philosopher. This volume (taking the folio which I offered him) contains only a trifling portion of my writing. I regret to say that the bulk of the two hundred essays which I penned have been lost. I am glad, however, that my *Ethic Portraits* and my *History of Botany* have survived. Much time and labour did I expend on these, and if you have read the *Natural History* of Pliny you will be well aware that he, like many other writers of that age, often found occasion to quote my opinions."

"We cannot thank you too warmly, Sir," remarked Linnæus, "for the great service you have rendered to after ages by preserving to us the works of your master Aristotle."

"Indeed," replied Theophrastus, "it was the very least I could do. When my master left Athens, after the sentence of death had been passed upon the noble Socrates, it fell to my lot to succeed him as the principal of the school of philosophy, and when the master lay a-dying he entrusted his writings to my special care. His mind was of the most versatile description, and from him I imbibed that art of research which enabled me to treat of such widely varied themes, and secure the friendship of Ptolemy Lagos, King of Egypt, Cassander, and other royal

personages who in that age rejoiced to be found among the patrons of learning."

As the learned Greek ceased, the company by common consent desired Linnæus next to speak. He commenced by stating that when he first entered upon his researches he found science pretty much where it had been left by the school which Theophrastus and Pliny represented. In some respects, indeed, men had gone backwards instead of progressing since the Greeks and Romans wrote. During the long, dark ages which had intervened men had been content to copy and corrupt the ancients, multiplying their fables, encumbering their facts and theories with a hopeless mass of idiotic and senile comment, and obscuring the truths which had been brought to light by the original students of nature. "When I was a student (he continued), Europe was about to awake from the slumber of the ages. A few stars were beginning to illumine the dark horizon, and the spirit of the age was one of enquiry and criticism. Though I spent the greater part of my life at the University of Upsala, few men have ever been so fortunate as myself in securing the co-operation of devoted students of nature. From every quarter of the globe the vessels which visited our shores brought stores of good things, many of which had till then never been seen or described by men of science. Ellis, Sherard, Dillenius, Petiver, Richardson, Solander and Osbeck, may be named as a few of the representatives of that noble army of toilers, who last century helped to fan the fire of enthusiasm which nature had enkindled in my breast."

To the question, put by Paley, whether he would oblige us with a few biographical details, Linnæus replied as follows:—

"My father was a clergyman. I am glad to know that recently a learned savant has called attention to the fact that the clergy have the honour of being the progenitors of some of the most famous artists, men of letters, philosophers, and scientists, which have ever lived. My father was fond of gardening, and his little plot of ground was always stocked with the rarest plants that could be obtained. Hence my earliest memories are associated with choice productions of nature. I was born May 24th 1707, and as a youth was educated for the Church. I had no liking, however, for the wearisome routine study assigned me, and much preferred to catch butterflies and gather flowers. Failing as a student, I was sent to learn Crispin's art, but thanks to Dr. Rothmann, was duly rescued from the cobbler's bench, and began to study medicine. At 20 years of age I entered the University of Lund, and after undergoing sundry trying experiences, owing to the straitness of my means, was fortunate enough to obtain the patronage and friendship of Celsius. By his aid I was able to continue my researches, till Rudbeck took me into his house, whereupon my initial difficulties came to an end."

Paley enquired whether or not Linnæus had, as stated, travelled

much before settling down at Upsal, and was informed that in 1732, the great naturalist undertook a journey of 3,500 miles, alone, through Lapland for the Academy of Sciences upon 50 dollars (Swedish currency). "The following year," added Linnæus "I visited the mining district around Fahlum, then travelled through Dalecarbia, and a little later re-visited Lapland and wrote a Flora of that country. The first sketch of the *System of Nature* appeared in 1735, and from that time forth my tongue and pen were alike in unceasing employ in the service of science. One of the most interesting events of my life occurred in 1736, when I was enabled to visit England, and thenceforth my love for this country never ceased. Sorry as I am that my native land did not secure the collections which I left behind, I am nevertheless proud to think that they have fallen into such good hands, and I deeply appreciate the honour which Englishmen have conferred upon my name."

(*To be continued.*)

HINTS FOR THE MONTH.

LEPIDOPTERA.

Nyssia hispidaria may be found in February resting on oak trees in Richmond park, the New Forest and the localities in the north of England where it occurs. *Eriogaster lanestris* is one of the moths which appear in February; others are *Phigalia pilosaria* which may be found resting on oak trees, *Hybernia progemmaria* and *H. leucophearia*. The reddish grey larvæ of *Ellopia fasciaria* may be found now on fir trees. *Cheimatophila mixtana* flies about heathy places. This tortrix has silvery grey fore-wings streaked with chocolate brown and the edge of the costal margin is reddish.—A. H. WATERS.

COLEOPTERA.

Whenever the weather is favourable the Coleopterist should be "on the war-path," and he will doubtless add many species to his collection (if he is a beginner) this month, that is if he is not afraid of a cold wind. The same methods, mentioned last month, can be carried on to advantage this. If it is too cold for much out-door work, the collector should procure a canvas bag into which he can shake the moss and tufts and examine at his leisure at home, but I should not advise this unless he has an out-house of some kind in which to examine the contents of the bag, otherwise he will probably have his home tenanted by many kinds of undesirable insects, spiders, centipedes, woodlice, etc, *ad lib.* Rotten wood will well repay the student especially old

posts and fences on the coast, where many good insects may be found occasionally; several species may also be found under bark. Flood-refuse is always very productive, if examined when the water is at its height, many great rarities being sometimes obtained in numbers, and the coleopterist should always be on the look-out for floods in his vicinity.—A. FORD.

CONCHOLOGY.

I gave a list in the January No. of those species which may be found in sheltered spots under favourable conditions and my remarks apply equally well for this month. *Helix rupestris* and *H. fusca* do not appear to suffer any inconvenience from the cold weather, and may be taken from exposed situations during several degrees of frost. The former species has a predilection for old walls. Mr. Rimmer has observed the latter abroad and active (crawling on the blades of the Great Hairy Woodrush) at a time when the thermometer registered 26 degrees. The winter habits and habitats of the slugs deserve attention—I often notice, at this time of the year, *Arion hortensis* and *A. fasciatus* snugly ensconced under large stones in the hedgerows; *Agriolimax agrestis* under logs and sticks; and *Limax maximus* concealed under the bark of fallen trees. I may add that students of the slugs will do well to take in the "Journal of Malacology," a quarterly magazine edited by Mr. W. E. Collinge of Mason College, Birmingham; it is the only magazine extant that contains reliable and up to date information on slugs and slug-like genera.—E. W. SWANTON, Bratton St. Maur.

RURAL NOTES AND OBSERVATIONS.

ROYSTON, CAMBS.

January 1st, 1894: From the time I penned my last notes about the middle of December, all zoological matters have, in this locality, been exceedingly dull, but only in keeping with nearly all other mundane affairs. As I have nothing to tell my readers, perhaps some of them may be able to give me some information on the two following questions.

1.—Is it a very common occurrence to meet with tape-worm in the wild rabbit? I have seen a good deal of this animal, but I have no recollection of meeting with a case till now.

2.—Can anyone give me any authentic record of inter-breeding of the common sparrow with the tree sparrow, *Passer montanus*? I fear I shall get but little information unless the tree sparrow is better known in other places than it is here. I have

had several of them brought to me alive, having been taken at night with the common sparrows. It can only be quite recently they have become more numerous and breeding freely, nesting in the stacks and farm buildings. I am very much inclined to think that there is inter-breeding, but at present I have not been able to meet with any satisfactory examples of mule birds.

January 8th: A black-headed gull, *Larus ridibundus*, and a common gull, *Larus canus*, were brought in this morning.

January 10th: A great crested grebe, *Podiceps cristatus*, was killed near here yesterday. This is a rare bird in this locality. Also a beautiful snow bunting, *Plectrophenax nivalis*; it appears that the bird is more frequently met with than it was a few years ago.—RAMBLER, January 14th.

STRAVITHIE, FIFESHIRE.

During the last fortnight in December we had very mild and warm weather, and as an instance of this the rooks began to build their nests, and a robin's nest with six eggs was found near Annan on New Year's Day. During the same week a swallow, *Hirundo rustica*, was observed flying about St. Andrews.

Since New Year we have had quite a change of weather, putting, I have no doubt, a stop to all thoughts of nest-building. The frost has been unusually severe—the thermometer standing at several degrees below zero—causing several of the water-pipes to freeze.

I am glad to say that Kingfishers have become more abundant this year; several have of late been seen frequenting the Leven and Orr waters in the west of Fife. But alas! I am afraid they are doomed as several persons with guns have been pursuing them of late. Would it not be better to observe them in their natural element than witness their annihilation from off the face of the earth?—Wm. BERWICK, January 10th.

EDITORIAL NOTES.

DEATH has been busy among the ranks of our naturalists lately. Two able botanists of the old school—Professor Bentley and Dr. Spruce—have ended their labours. Both were workers of an elder generation, the last named perhaps being best remembered in connection with his explorations in South America. Mr. John Plant, also, a former curator of the Manchester Museum, has joined the great majority, while a zoologist of a promising and somewhat newer order has been lost in Professor Marshall.

We are glad to learn that Yarmouth naturalists have again

made a vigorous start, (after the decease of the Young Naturalists' Society,) as a branch of the Norfolk and Norwich Naturalists' Society, under the designation of the "Great Yarmouth Naturalists' Society," and with the evident intention of doing good work if we may judge by reports received.

FIELD CLUBS AND SOCIETIES.

GUERNSEY SOCIETY OF NATURAL SCIENCE AND LOCAL RESEARCH.—The usual monthly meeting of this society was held on Wednesday evening January 10th, The president Mr. E. D. Marquand exhibited specimens of a rare lichen *Umbilicaria pustulata*, Hffm. which he had recently found on the cliffs near Petit Bo Bay. It had been previously recorded from Guernsey in Leighton's Lichen Flora of Great Britain on the authority of the late Mr. F. C. Lukis. The plant is extremely interesting, it being a sub-Alpine species. It is recorded in England from the higher parts of Dartmoor and the Welsh and Cumbrian Mountains etc. Its occurrence in Guernsey with such mosses as *Bryum alpinum* and *Grimmia leucophæa* seems to point back to a period when the altitude of the land greatly exceeded what it is at present.

The president then read his "Notes on the Mammalia of Guernsey," he himself from his personal knowledge giving the following Mammalia as breeding in a wild state in the island:—Hedgehog, introduced about 50 years ago, now common ; Rabbit ; Hare, introduced and exterminated ; Brown Rat ; Common Mouse ; Short-tailed Field Mouse; Common Shrew; Horseshoe Bat ; Long-eared Bat ; Little Bat ; Common Porpoise. To this list, must be added :—The Stoat. A specimen was shot by Colonel Collings ; and there are two in the Museum recently shot in the island. Long-tailed Field Mouse: there are two specimens in the museum from Guernsey, and Mr. Hocart reports them as formerly very plentiful at Mont Crevelt. The Seal has been taken in Alderney, Serk and Herm ; but the Society would be pleased if it could record a Guernsey specimen. Additional Bats probably exist ; one, a high-flier of light colour, has been observed by Mr. Luff in the Talbot Valley. The Council would be very pleased if someone would procure an example. It seems probable that the Black Rat still exists in Guernsey ; it is still common in Herm, Serk and Brechon. Other members of the mouse and rat tribe may also occur, especially those frequenting ponds and streams. The members would be pleased to receive Guernsey specimens of any of these creatures not entered on the society's list.

LAMBETH FIELD CLUB.—December 18th: A "social evening" was held at the Society's rooms, during which exchanges of specimens were made, the specimens themselves discussed, and light refreshments partaken of by the members present. The promised paper on "Tin and Lead" was again postponed; nevertheless, a very enjoyable evening was spent.

January 8th, 1894: The first meeting of the year was the occasion of a most entertaining lecture by Mr. Frank R. Tayler, the subject being "A Ray of Light." The lantern was used to illustrate the lecture, and a number of explanatory diagrams and natural scenes were shown on the screen, some of the latter being extremely picturesque and exciting much admiration. The lecturer began by pointing out that were it not for light there would be no life—animal or vegetable—on the earth. It was light that produced colour throughout nature, and it was light that was directly connected with the sense of vision in ourselves and other animals. The heavenly bodies were revealed to us only by the light they emitted or reflected. The principal source of light was, of course, the sun, whose light was one hundred and forty times greater than limelight, and even the darkest part of a sun spot was more brilliant than the latter. Light itself however, was invisible, and a beam of sunlight was only seen by reflection to our eyes from dust particles in the air. The lecturer then proceeded to explain the structure of the human eye, which he said was made up chiefly of three distinct parts, the aqueous humour, the crystalline lens, and the vitreous humour. Light coming from an object was converged by the crystalline lens on to a screen at the back of the eye, called the retina, where it came to a focus and a picture of the object was formed, of which we were made aware by the optic nerve conveying the fact to the brain. Behind the retina there was a coating of dense black pigment, which prevented any of the rays of light from being reflected, though in some animals, as the cat, there was a structure corresponding in situation, called the tapetum, which did reflect the light, and this was why a cat's eyes shone in the dark. Of course this could not happen in *total* darkness. The analogy between the eye and the photographic camera was very evident. The velocity of light was first made known by the observations of Roemer, who noted the period that elapsed between two successive emergences of Jupiter's first satellite from the shadow cast by the planet, through which it travelled in its revolutions. Later researches had fixed the velocity of light at 186,000 miles per second. Sunlight took about eight minutes to reach us, and a cannon ball going at a constant rate of speed would cover the distance in seventeen years. A number of optical illusions were explained by reflection. Such was "Pepper's Ghost," which was simply the reflection in a sheet of plate glass, inclined a little forward, of a person concealed from the spectators. The actors

behind the glass were, of course, unable to see the reflected image, and therefore had to exercise great caution in correctly locating the "ghost." The refraction of light was next touched on. This occurred on its entering a denser medium, and led to the apparent displacement of heavenly bodies near the horizon, and also to the bent appearance of straight objects when partly under water. The well-known phenomenon of the "mirage" was produced by the light striking a cooler and denser stratum of air as it was reflected upwards, and being again bent towards the earth to become visible to an observer in the distance. By admitting light through a small hole and then passing it through a prism, Sir Isaac Newton had first produced the solar spectrum. But the sunshine falling upon drops of rain was decomposed and gave rise to the rainbow, this being a natural manifestation of the same thing. Having spoken of complementary colours, the lecturer concluded by showing how light travelled in waves, which was also true of sound, but while sound was confined within atmospheric limits, light knew no bounds, but was transmitted by an all pervading lumeniferous ether. The lecture on February 5th, will be on "A Piece of Marble," by Mr. A. P. Wire, of the Essex Field Club, and at the gossip meeting on February 19th, Mr. Baskerville's paper on "Tin and Lead" will be read.

WINCANTON FIELD CLUB.—The fifth annual meeting was held on June 25th last, the president, Mr. T. H. Baker, F.R.M.S., in the chair. The report contained a local list of birds compiled by Mr. A. E. Swanton. Mr. John Phyllis read a paper on the discovery of Roman remains at Shepton Mallett. Principal exhibits: Mr. John Phillis, many Roman articles, pottery, coins, etc., from the neighbourhood of Shepton Mallett. Mr. A. E. Swanton, local birds' nests with clutches of eggs, including Emberiza cirlus. Mr. E. W. Swanton, local coleoptera, including Lucanus cervus. Mr. W. Herridge, a large and well mounted collection of grasses; also Carduus tuberosus from Mere Down. The three excursions were:

1. To Kelvington and Maiden Bradley.
2. To Buckhorn-Weston and Cucklington.
3. To the Godney Lake Dwellings near Glastonbury.

The first of the winter lectures was given in the Wincanton Town Hall, on November 9th, by the Rev. F. Weaver, M.A., of Milton Clevedon, his subject being "Pre-reformation Wills."

HASTINGS AND ST. LEONARDS' NATURAL HISTORY SOCIETY.—On Thursday evening, December 14th, Mr. E. Connold gave a very interesting lecture on "The life-history of a caterpillar." The lecturer exhibited a number of cleverly drawn diagrams on

the structure, etc., of caterpillars and also a case of silk moths and cocoons. At the close of the lecture a few remarks were made on the subject by Messrs. Bennett, Esam, and others, and a vote of thanks accorded the lecturer.

A meeting was held on December 28th, when a number of microscopes and slides were exhibited. Several discussions were raised on various subjects by some of the members, and a very enjoyable evening was passed. The membership has now increased to 53.

At the meeting which took place on Thursday evening, January 11th, about 40 members being present, two interesting papers were given ; the first by Mr. H. G. Jeffreys on the "Hairy-armed bat," *Scotophilus leisleri*, and he afterwards exhibited a specimen of this mammal. The second paper was on "Local coleoptera," by Mr. W. H. Bennett who exhibited a large number of specimens to illustrate his paper, including many rare and local species. A few remarks were made at the close of each paper, by some of the members, and a vote of thanks passed to the essayists. The secretary remarked that the membership now amounted to 67.—A.F.

A VISIT TO THORNDON PARK.

Situated close to the station of East Horndon and within a few miles from London is Thorndon Park, the seat of Lord Petre.

This park is, I believe, the largest in Essex and contains many grand old majestic oak and other trees. A public footpath runs through the southern end and beautiful views are to be obtained here of the Thames valley, Kent, etc. It is a paradise of rolling wooded slopes intersected with little brooks, masses of bracken, etc., and contains a large variety of living things dear to the eye of the naturalist.

The hedgerows are looking beautiful with their show of wild roses and the banks and ditches are gay with many kinds of wild flowers, the air is alive with the hum of insect life. Butterflies, especially the 'orange tip,' are numerous and around the pools dragon-flies of more than one kind may be seen. Every now and again a partridge rises with much noise and goes scudding away over the fields, while an occasional movement in the long grass betrays the presence of a rabbit or hare. A cock pheasant quickly makes himself scarce behind a bunch of gorse, and a party of green woodpeckers are busy running up the trunk of a tree near at hand.

As we reach a lake in the park, we notice a family of moorhens disporting themselves on the water, and a pair of summer snipe are paddling about on the edges ; wood-pigeons are to be seen on all sides, and a beautiful specimen of the lapwing or peewit plover is diligently searching for food amongst the moist grass near the lake. I never see a peewit but what I think of the value these birds are to the agriculturist, they should have every protection afforded them, for they destroy large number of such pests as the wireworm, turnip fly, etc. Another interesting sight here is that of the squirrels gambolling in the tree branches, these in one instance have approached too near the nest of some starlings, and the old birds are flying around with much fuss and chattering. On the trunk of this very tree we also observe a small bird, evidently a tree creeper, which keeps pecking away at the bark for insects. Chaffinches are very plentiful as is also the beautiful little yellow-hammer. Some half-dozen examples of that summer visitor the red-backed shrike are seen during the day and one of these birds rises from the ground with what looks like a small field-mouse in its beak. One pair of bullfinches are observed in this park ; they are more numerous in the neighbouring gardens and orchards.

Of the magpie, jay, or any of the hawk tribe we see none for game preserving is carried on here. Rooks are very common and many of the active and lively jackdaws are about ; they evidently nest in the adjacent church towers, etc. There is no mistaking the jackdaw with its shrill voice and partly grey mantle. In the company of the sheep and lambs are several of those nimble and handsome birds, the wagtails ; these are busy snapping up the flies that are worrying the animals. The notes of the cuckoo and the cooing of the doves are to be heard here all the live-long day and as the dusk of evening approaches the hares leave their "forms" for their feed, the blackbirds and the thrushes whistle their love songs to their mates, partridges are calling one another and after dark the nightingale may be heard pouring forth his notes.

"Who does not love to catch his thrilling notes and listen with delight,"

Before taking leave of this beautiful spot I must not forget to mention that a herd of deer may be seen at the private end of the park.—A. F. GATES.

RECORDS AND OBSERVATIONS.

MAMMALS.

Curious variety of the brown rat.—On Tuesday last (January 2nd) a local rat-catcher showed me a male rat which he had just caught in this neighbourhood. It was of a nut-brown colour, similar to that of a squirrel, and turned the scale at a pound.—A. F. GATES, Stratford, E.

Cat rearing a rat.—A remarkable cat story was told me the other day by a friend. A cat was found (in December last) in a loft rearing up a young rat, of the size of a large mouse, simultaneously with her three kittens. This is worthy of note for, as a rule, we find the foster-mother to have previously been deprived of her offspring before attempting to bring up that of another. I regret to add that the kittens and rat have been destroyed.—E. W. SWANTON, Bratton St. Maur.

BIRDS.

Occurrence of the Barred Warbler in Holderness.—On November 13th, Mr. Phillip Loten, of Easington, received a young male of this species (*Sylvia nisoria, Bechstein*) shot on that day by Mr. G. E. Clubley at Kilnsea. This is the third occurrence of this straggler to England in that neighbourhood, the first obtained by the Rev. H. H. Slater, at the Spurn, on August 28th, 1884; a second, October 19th, 1892, and this—JOHN CORDEAUX, M.B.O.U, in *The Naturalist*.

Lapland Bunting at Flamborough—In the *Zoologist* for January, Mr. John Cordeaux records the presence at Flamborough, during the latter part of November, of a fairly large flock of Lapland Buntings—a rather unusual sight as this bird is decidedly a scarce straggler to the south-east of England, while to the northern counties it has hitherto been a very rare visitor—H. K. SWANN.

White-tailed Eagle in Kent—The most beautiful specimen of the white-tailed eagle ever seen in the south of England, has just been shot on the Wadhurst Park Estate, Kent. The bird—a female—measured seven feet six inches across the wings, and three feet from beak to tail—*Graphic, January 13.*

Reported occurrence of the Cuckoo in December—Mr. D. S. Hibbs, of White House, Newton Manor, Swanage, writes to the *Western Gazette*, that on December 23rd. at 12.35, he distinctly heard a cuckoo three times, and that it was also heard by Mr. George Bishop, carpenter. The same paper reports that a wren's nest, containing two eggs, was found last month (December) by the groom at Lower Strode House, Lulworth.

INSECTS.

The Brimstone Butterfly—It may interest some of the readers of the *N.J.*, to know that a specimen of *G. rhamni* was caught at this address on September 18th. last. It was in excellent condition and is now in my possession. I believe this butterfly was rather scarce last year—ELFRIC H. SMITH, 17, Oval Road, Regent's Park, N.W.

TO CORRESPONDENTS.

G. H. B., Cambridge.---Received and shall be inserted.

J. T. N., Deal; E. H. B., Ludlow.---Many thanks for interest shown on behalf of *N.J.*; we heartily reciprocate your good wishes.

We have received catalogues of works on Natural History from Mr. John H. Knowles, of 15, Rush Hill Road, Lavender Hill, London, S.W., and the Naturalists' Publishing Co., of Birmingham.

15 AUG. 94.



EXCHANGES.

Articles for Exchange and Wanted (not involving a money transaction) are advertised in this column without charge; an advertisement must not contain more than forty words.

LEPIDOPTERA—Duplicates: *Verminalis* (bred), *Cerago*, var. *flavescens* (bred), *Silago* (bred), *Osseana*, *Contaminella* (bred), *Nisella* (bred). Desiderata: very numerous—William Newman, 21, Russell Street, Darlington.

LEPIDOPTERA—*P. machaon*, *G. rhamni*, *C. edusa*, *C. hyale*, *L. sybilla*, *G. album* offered in exchange for other species of insects—C. T. Jones, 24, North Bailey, Durham

DUPLICATES—*Rhamni*, *Hyale*, *Aglia*, *Lathonia*, *Atalanta*, *Urticæ*, *Io*, *Cardamines*, *Brassicæ*, and oak egger (*Quercus*). Desiderata: *Cardui*, *Polychlorus*, *Sibylla*, *Arion*, *C-album*, and *L. cervus* (stag beetle)—G. White, 46, Grafton Square, Clapham, London.

COLEOPTERA—Wanted to exchange foreign beetles—Dr. Heath, 114, Ebury Street, London, s.w.

FOR exchange—A fine series of *Macroglossa stellatarum*, also *Journal of Conchology* (unbound) and Field Club (unbound) for 1893. What offers in British birds' eggs?—E. W. Swanton, Bratton St. Maur, Wincanton, Somerset.

WANTED—Side-blown (one hole) British birds' eggs, in exchange for insects apparatus, or books and periodicals—H. K. Swann, 369, Euston Road, London, N.W.

WANTED—Good botanical and other microscopic slides, coal fern fossils and minerals of crystallisation. Offered in return, British marine shells and unmounted microscopic objects and material, or state wants—A. J. R. Slater, 43, Northumberland Place, Teignmouth.

OFFERED—Seaweeds, microscopic slides, and herbarium specimens, in exchange for natural history books, foraminifera soundings, exotic butterfly-wings, etc.—J. T. Neeve, 4, Sydenham Road, Deal.

WANTED—Carpenter's or Brady's "Foraminifera" for a month; I will give a dozen micro slides for loan of same—J. T. Neeve, 4, Sydenham Road, Deal.

WANTED—Natural History books, Boy's Own Papers, magazines, parts 1, 8, 11 and 12 Life Lore, and odd parts Cassell's Canary and Cage Birds. Exchange Vol. 1 Scientific Facts, Science Siftings, new setting boards, pigeons, bullfinches, etc.—Davis, 33, Brighton Terrace, Brixton, London.

BIRDS' EGGS—Wanted, side-blown eggs of landrail, gt. crested grebe, kestrel, swift, nightingale, wryneck, wood-wren, gulls, terns, ringed plover, buzzard, owls, red-backed shrike, gold-crest, skylark, starling, coot, dumlin, etc. Offered rare eggs in clutches or single—J. Ellison, Steeton, Keighley.

DUPLICATES.—About 500 species of British coleoptera, all correctly named and neatly carded, including many rare and local. Desiderata: British and foreign coleoptera and foreign diurni.—A. Ford, Glen Mount, Braybrooke Rd., Hastings.

VIPERS.—Will any readers kindly send me what information they may possess as to the distribution of the Viper in Cornwall? I shall be pleased to send shells, micro-slides, books, etc. in return for spirit specimens of this reptile from any British locality or will purchase examples.—George Mason, 203, Ebury Street, Eaton Square, London

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THE MENTONE CAVE MEN.

By G. H. BRYAN, M.A.

HE discovery of prehistoric human remains is always of great interest, for the few vestiges of by-gone races which are preserved to us in caves form a connecting link between the present and the past ages and teach us many lessons about the development and habits of our earliest forefathers. A considerable sensation was therefore naturally produced, both among the residents on the Riviera and in the scientific world generally, by the announcement of the discovery (on the 7th of February, 1892) of three complete skeletons interred together in one of the bone caves of the Red Rocks which—even in spite of quarrying operations—still form such a picturesque and noticeable boundary to the eastern bay of Mentone.

As it was my good fortune, during a recent trip on the Riviera, to see these skeletons and the various implements and ornaments found at the same time, it may be perhaps interesting if I give a short account of them.

The Rochers Rouges or *Baoussé Roussé* as they are called in the local *Mentonasque* dialect, consist of a fine perpendicular cliff of Jurassic limestone at the foot of a range of lofty hills just beyond the Italian frontier, a little eastward of Mentone. Owing to the action of weather during countless ages coupled with the presence of iron, this rock, like many other rocks in the neighbourhood, has assumed a beautiful orange red colour, and at its base are hollowed out several caves which have afforded shelter during past ages for both wild animals and prehistoric men. There is a little disagreement between the various authorities about the number of these caves, for M. Riviere, of Paris, enumerates six

but M. Bonfils, the enthusiastic curator of the museum at Mentone, only admits five of these as genuine caves, the other being merely a crevice in the rock. The new skeletons were found in the fifth cave of M. Riviere which is accordingly the fourth cave of M. Bonfils.

It is much to be regretted that the Red Rocks have, during the last seventeen years, been utterly spoilt by quarrying—one of the many acts of vandalism that are now perpetrated daily in the neighbourhood of Mentone. The fine projecting mass of rock with such a picturesque outline between the fifth and six caves of M. Riviere (fourth and fifth of M. Bonfils) is now almost entirely gone, and only a stone-quarry busy with workmen remains, while even the whole of the mouth of the fifth cave has been destroyed, and it was in the course of blasting away the side of this cave that the skeletons were quite accidentally discovered by the quarryman, a common uneducated workman.

At the present time the number of human bodies of which remains have been discovered in these caves has been brought up to eleven, namely five complete skeletons and portions of six others, as will be seen from the following list:—

1872—73. Complete skeleton of neolithic man discovered by M. Riviere. This is M. Riviere's well known "l'homme de Menton," and is in the museum at Paris. Fragments of three human adults of heights 1·85, 1·90 and 2·00 metres respectively. Fragments of three children.

1884. M. Boufils discovered a perfect skeleton of a man 2·03 metres high. This is the "nouvel homme préhistorique de Menton" and M. Boufils claims that it belongs to the palaeolithic era. The skull is in the museum at Mentone, but the rest of the bones were stolen by the quarrymen and have never been recovered.

1892. Three entire skeletons of the neolithic era. According to M. Riviere's report the present skeletons were found resting at a distance of 18 metres from the mouth of the cave, but as the latter has been destroyed these figures are not reliable. The cave is given by him as about 31·50 m. deep at its narrowest part.

At the time of my visit, April 11th, the skeletons were still *in situ* but the skulls which had been sheltered by the workmen's pick were removed and were being pieced together. The orientation of the bodies was E-W, although all the skeletons previously discovered had been found pointing N-S.

All these skeletons were lying on their sides, the middle one at a slightly lower level than the other two. Of the latter, one was an old man, the other being a lad of about twenty as shown by the fact that the wisdom teeth were not fully cut. The middle was supposed to be a woman but being embedded at a slightly lower level had not been so critically examined. The heights have been variously estimated, for in a notice which appeared in

the *Standard* at about this time the old man was stated to be eight feet and the woman six foot three inches high. On the other hand M. Riviere estimates the height of the old man at 2.08 metres and one of the others at about 1.85 m. But it is difficult to judge what would be their true heights when extended at full length for they were lying on their left sides with their legs crossed, and a measurement from head to foot would make them far too short.

The skulls are of a most remarkable oblong shape, showing them to belong to the dolicocephalic or long-skulled type, being of a very rectangular shape. The teeth are in a very perfect state of preservation.

Two of the skeletons had the left arms raised and in the hands were placed large flint scrapers on which the heads were resting. The scraper behind the skull of the old man measured eighteen centimetres long by 8.5 centimetres broad. The right arms of both were in a position of rest, lying on the bodies. The third skeleton had the left arm extended and the hand held another flint scraper. All the bones were coloured red with bright spots of the oligistic iron which evidently served to cover up the bodies when they were being interred; it is supposed that the use of this iron formed a part of the funeral rites.

A great many other objects were found accompanying the remains, and most of these were hardly less interesting than the skeletons themselves. Each of the three had a necklace, one being formed of shells of a species of *Nassa*, while another consisted of the canine teeth of a stag with holes drilled through for stringing together, and the third was made out of the vertebræ of a fish of the genus *Salmo*. Both the teeth and the vertebræ are of the same brick-red colour as the skeletons.

On the legs were found two cowrie shells *Cypraea* one being placed just above the instep. But perhaps the most remarkable object of all was an hour-glass shaped body fashioned out of stag's horn. Its form might be more accurately described as a double ovoid, resembling two eggs fastened together by their ends. The length of this object has been stated by M. Riviere in his report as three hundred and ninety six millimetres but this is certainly an exaggeration. From memory I should say it was not more than four inches long at the most. The whole surface was engraved with fine parallel and regular equidistant grooves or scratches running longitudinally from end to end, and M. Riviere has given no judgment of its probable use, of course it may have been merely an ornament, but even so the constriction in the middle and the fine grooving would be difficult to account for. Highly finished flint implements prove the present remains, as well as those discovered by Riviere in 1872, to undoubtedly belong to the neolithic or later Stone Age, but M. Bonfils is very intent on proving his "nouvel homme" of 1884 to belong to the far older

or palæolithic era. He bases this conclusion on the much greater depth at which the skeleton was buried, coupled with the absence of any highly polished flints in its immediate neighbourhood. It may be mentioned that small flints are found so abundantly throughout the beds of earth which form the flooring of the cave that M. Bonfils has built a trophy of them in his museum in honour of the visit of the French Association for the Advancement of Science. The new skeletons were concealed by an overhanging ledge of rock and it was by the removal of this rock that they were brought to light.

From the time of their discovery to the middle of April, the skeletons were left in situ in the cave with no protection beyond a few loose planks laid over them, and the bones must have suffered a great deal of injury from exposure to the air. A few days after our visit they were removed and the cave locked up, pending a lawsuit in which they literally became a "bone of contention," the quarryman, M. Riviere, the Prince of Monaco, and the Italian Government all having laid claim to the "treasure trove." The Prince has since then come out victor in this dispute.

NOTES ON FUNGI.

By CLAUDE MORLEY.

There is a wide-spread popular belief that, as soon as the sombre autumnal tints fade away, and the leaves which compose them are fallen, the country loses its charm for all save the sportsman and the agriculturalist; but this, together with numerous others, is also a popular error. Any one who has taken the trouble (or pleasure) to read a few even of those most interesting books and periodicals which are continually being printed, will know that nature has lost not one of her thousand charms, but simply hidden them away in some safe, quiet, and comparatively warm nook or cranny during the chill season of the year in order that they may be reissued the following spring in all their perfected beauty and grandeur.

The fallen leaves, half buried by the action of the rain-water, which decends in more or less abundance about this time of the year, are very propitious for the birth of the various innumerable species of fungi, apparent to the eye of even the most casual observer. The origin of these fungi is both interesting and exceptional. Spores are detached from the parent plant and become buried in the earth, where, by reason of a great inherent power of nitrogen absorption, they increase in size, forming at first a single tube, afterwards branching out into a series of tubular

filaments, and in this manner matting the ground. Presently several of these tubular filaments will coalesce, and a little rounded protuberance appear. This is the embryonic fungus, which, continuing to grow, will in perhaps a few hours be some six inches in height. A story is told of a fungus two inches in height, which had sprung up, to the certain knowledge of the recorder in one night! The great red cap of the Fly Agaric, so abundant in our Suffolk Woods, the tiny waifer-like stem and spicules of the club bearing fungi, and the great broad *pileus* of *Polyporus squamosus*, almost invariably found high up on the trunk of some tree of considerable growth, are probably the most noticeable and striking.

Toadstools, appearing to rise from dead leaves and coming chiefly, as they do, at a time of year when all other vegetation is on the decline, carry out, maybe, better than any other group in the natural scale, the truth of that line, dear to every naturalist and lover of nature :—

“Life springs up from life’s decay.”

and this life of the fungi is not, as one might suppose, an entirely selfish and egotistical one from its isolation, both as regards season and situation—excepting, of course, the case of our own edible mushroom, which by the way is the only fungus looked upon with suspicion by the Italian fruiters. If any of the Agarics be rooted up and shaken over an inverted open umbrella, hundreds of tiny beetles will fall out and, if many fungi be shaken, probably there will be a thousand little creeping *Brachelytra* all in the umbrella at the same time. All these wee parasites live, eat, lay their eggs, and die upon, and among, the gills of the plant, and were there no fungi, science would in all probability lose hundreds of species of *Coleoptera*, which would have no natural food on which to subsist.

It is a remarkably curious fact that these singular plants absorb oxygen and respire carbonic acid gas. In the case of ordinary flowering plants the order is reversed : a *geranium* will inhale carbolic acid gas from the atmosphere (often hydrogenic also!) and give off oxygen. In connection with this, botanists think that the scarcity in fungi of green colouring matter, so constant in flowering plants, and the botanic world in general, is due to this reversal of transpired gases. Botanists are, however, unanimous that, in flowering plants, light is absolutely necessary, not only for the growth and healthy condition of the plant, but also for the existence of the green chlorophyl, or colouring matter. On the other hand light does not appear to ameliorate the growth of fungi, which often choose a dark cellar, hollow tree, or cavity in a flagstone in which to flourish ; some species of the *Hypogaria* live even below the surface of the earth and never under any natural conditions whatever catch a ray of sunlight.

The enormous expansive power of various species of fungi is marvellous. Some twenty years ago one of the streets of Basing-stoke was paved. Soon the pathway showed the most inexplicable signs of unevenness, and in about two months some of the largest and heaviest flagstones were lifted completely from their beds by the growth of the soft cellular tissue of huge toadstools. One of these stones weighed eighty three pounds, which, when the almost greater resistance of the mortar be taken into consideration, gives one some idea of the vast, silent, and unseen power of these perhaps the strangest of plants.

HINTS FOR THE MONTH.

LEPIDOPTERA.

Look on twigs and tree trunks for *Eriogaster lanestris*. If the sallows be in bloom visit them for the *tæniocampæ*, if not try sugar and light.

Brephos notha, *B. parthenias* and *Ceropacha flavigornis* fly by day in the open parts of woods; the two latter are partial to birch trees and *flavigornis* may be found at rest on the branches.

C. ridens may be expected towards the end of the month if the weather be mild and should be looked for on oak trunks, or palings in the vicinity.

Look on fir trunks for *Trachea piniperda*, also search oak and larch trunks; *N. hispidaria* and *A. prodromaria* may be expected at the former and *T. crepuscularia* at the latter. *Dasypolia templi* may still be found under stones in the north.

LARVÆ.

Several larvæ may be found now by searching grass at night with a lantern or early in the morning, especially look for such "wainscots" as *Leucania straminea*. Also search low plants, that is weeds, in the same way for *Caradrina alsines* (on dock), *Tryphæna interjecta*, *T. orbona*, etc., *C. cubicularis*, if you want it, you may find in abundance on chickweed. *Phlogophora flammea* is local but the larvæ should be sought for by those residing on the Sussex coast. Look now for the curious cases of the *Psychidæ*; *Psyche nigricans* occurs in the New Forest. Search on lichens for several species which in the larval state feed upon them, such as *Bryophila perla*, *B. muralis*, and *Cleora lichenaria*. Look on the Scotch fir trees for mines of *Cedestis farinatella* and *Ocnerostoma pinariella*. Entomologists living in Perthshire should look out for *Cedestis gysselinella* which spins a white web between the leaves of the Scotch firs at Rannoch—A. H. WATERS.

COLEOPTERA.

Many beetles will leave their winter quarters this month and the student should keep a sharp look out on warm days for these; many species will be found running on pathways in the sunshine and also on the pavements of towns and occasionally very good things may be met with. The banks of streams, ditches, ponds, reservoirs, etc., are often very productive, the best method of working these is to throw up the water over the banks with the hand or a small tin can; sometimes, in the bright sunshine, they may be found in great numbers in such localities. A few species may be found at the catkins of the sallow; to obtain these the sallows should be shaken over an open umbrella. Many species may be found under stones and clods of earth, etc., especially in damp places, also on the seashore above high water mark and heaps of seaweed in the same locality are often well worth working as many scarce and local beetles may be obtained in this way. One of the best methods of collecting, and one which can be carried on at all seasons of the year, is searching at the roots of plants, grass, etc.; this was one of Dr. Power's favourite methods and he turned up many great varieties in this way; a little practice will soon enable the student to detect the more minute species. The best localities are sandy and chalky banks, etc., where the grass grows in patches. The roots should be *very carefully* examined otherwise many species will be passed over.—A. FORD.

CONCHOLOGY.

In this month the larger Helices emerge from their winter retreats. *Helix pomatia* (the largest) is one of the latest in appearing and may be looked for at the end of the month. *Helix hortensis* may be taken from almost every hedgerow. It is noticeable that this species in common with *H. aspersa*, is of greater frequency in the vicinity of villages. *Helix nemoralis*, so common in woods, may, in company with *Bulimus acutus*, be found in large numbers on the sand dunes near the coast, and should be looked for after a shower of rain. In collecting *H. nemoralis* and *H. hortensis* note the variations of the Band Formula. It is curious that the third or periphery band should be so rarely absent. The presence of that band *only* in *H. hortensis* is rare, yet of common occurrence in *H. nemoralis*.

I noticed last year that *Bulimus montanus* evinced a fondness for the decaying fronds of the common polypody fern, this local species is abundant in the localities where it occurs.

Carychium minimum and *Hyalinia fulva* may be taken in damp situations, from beneath decaying wood—E. W. SWANTON, Bratton St. Maur.

BOTANY.

Draba aizoides flowers in March on the rocks and walls nea-

Swansea. The common *D. verna* has been in bloom for the last three weeks on walls and dry banks. Both species are popularly known as Whitlow grass. *Daphne laureola* (Spurge laurel), flowers now in woods. The naturalised mezereon (*Daphne mezereum*) blossoms in March and botanists living in Oxfordshire and its other localities should look out now for its bright purple flowers, which appear before the leaves—A. H. WATERS.

RURAL NOTES AND OBSERVATIONS.

ROYSTON, CAMBS.

January 23rd. Filberts showing their beautiful little crimson blossom, this is ten days earlier than last year. Acconites and other spring flowers are well out.

February 4th. "Straws show the way the wind blows," but whether the straws carried up by the sparrows mean early nesting and mild weather, or cold and stormy, remains to be proved, but I fear they are only building warm places to roost in.

February 7th. The strongest gale we have had for years.

February 8th. Bees carrying in large lumps of pollen.

The poor little sparrows are blamed for eating all the corn, however I have now before me thirty-seven grains of barley, taken from the crop of one yellow-hammer. I am curious to know the proportion of cock sparrows to the hens at this season? So far as I have been able to ascertain there is an undue proportion of the former, and a great many will have to remain bachelors unless they can go to some more favoured place to find suitable partners.

February 12th. Great gale from the West.—RAMBLER
February 14th.

FORGE VALLEY, YORKSHIRE.

By the REV. ARCHDEACON HEY, M.A.

A deep gorge excavated by the River Derwent, its steep sides completely draped with hanging foliage, a white road, a rushing stream, and a narrow strip of boggy turf at its bottom—such is a brief description of Forge Valley. To the Scarborough visitor, it affords a charming shady drive; to the angler, much enjoyment always, and sometimes a few trout; to the botanist or entomologist, a singularly rich field, for investigation. The

wood is very varied. Beech, oak, wych elm, ash and maple abound; Scotch fir, sycamore, mountain ash, larch, spruce, birch and lime are all present. Alders of considerable size line the river. The brushwood consists of hazel, spindle tree, elder and guelder rose. Hollies and spurge laurel show out in the winter months, with the broad leaves of the great drooping carex.

As early as February, the green hellebore begins to lift its flowers and purple leaves above the turf, soon to be followed by the delicate adoxa, and the purple and white flowers of the sweet violet. In April, spring flowers appear in legions, wood anemones, primroses, crowfoot, toothwort; giving place in May to bluebells, campions, and wood-forget-me-nots. The scarcer plants that now appear are *neottia nidus avis*, *Trientalis Europaea*, lily of the valley, *Lithospermum officinale* and *Actaea spicata*, to be followed at midsummer by *Spiraea filipenduli*, *Pyrotas*, *Melica nutans*, and whole banks of rock-rose. Then sheets of thyme bloom, and still later, *Gentiana amarella* discloses its pale amethyst flowers, and sweet marjoram purples the dry slopes, and among there pygmies, a giant woolly-headed thistle (*Carduus creophorus*) here and there rears its splendid crown.

Birds are, as might be expected, very numerous, though I am not aware that any particular varieties have been observed. In winter, flocks of bramblings sometimes appear—French linnets they call them here for some reason not easy to discover. Occasionally the flash of a kingfisher is seen darting up the river, or a goldfinch (redcap is the local name) is heard to pipe. Up above, the grey-backed crows sail to and fro in winter and a curlew will cross from moor to moor. In stormy weather, large numbers of seagulls come from the coast and mingle happily with flocks of rooks.

Forge Valley is rather rich in mollusca. *Helix fusa* and *H. sericea* are both plentiful on dog mercury. The former climbs trees, and I have often found it in the umbrella when beating for insects. *Clausilia laminata* is very abundant. On an old wall near the mouth of the valley, *Vestigo pusilla* occurs sparingly. *Balia perversa* is abundant in similar positions. In the river itself are *Valvata piscinabis*, *Planorlis albus*, and *Limnaea auricularia* var. *acuta*.

Of the beetles that have been found in the valley, *Potaminus substriatus* is the rarest and most interesting. Its habitat is mossy posts or chips of wood in the water. Other species worth recording are *Cychrus rostiatus*, *Amara bifrons*, *Hydroporus assimilis*, *Eros minutus*, *Telephorus alpinus*, *Chrysomela varians*, *Engis rufifrons*, and *Tripes aenea*.

It will thus be seen that Forge Valley is a particularly interesting spot to the student—it is not less delightful to the artist—for at every season of the year it is beautiful—beautiful in spring when the wood anemone spreads a silver carpet on the slopes

and the marsh marigold a golden carpet on the levels ; beautiful in summer when the air is perfumed with meadow sweet, and tier above tier of hanging foliage shades the fern-bordered wood-paths ; beautiful when autumn touches the maples with fingers of blood and the woods slowly burn themselves out ; beautiful in winter when the beech leaves form a carpet red as a fox hide, and between the white banks of frosted grasses and under silver trees, the river reflects the blue sky like a polished mirror—and beautiful too under every sort of weather—beautiful of course when the sun illuminates the woods, and the flicker of beech leaves weaves a thousand twinkling shadows on the smooth grey trunks, and the rushing water glance and sparkle over the pebbles, but beautiful also when the rain falls and moss, and fern, and lichen, imbibe fresh life and display fresh colour—or when the winds mock the sound of seas in the great woods, and whole armies of leaves rush in wild dances through the air ; or even when the weird sea mists creep up at the close of a hot spring day, and move ghost-like from tree to tree, bringing gloom and silence with them—ever deepening gloom and silence till at last the night hides all in impenetrable darkness.

BOOK NOTES.

Number 1 of "The Collectors' Monthly," published on the 15th of January, contains the first part of the following articles : The common sparrow in 1893 ; Notes on Hampshire birds ; Birds of Epping Forest ; A winter afternoon's collecting in Warwickshire ; also Notes and News, etc. The price of this little venture is only one penny, and we heartily wish success to it and also to its energetic publisher.

As it is not our custom to allow matters poetical to encroach upon our space, we must offer an apology to our readers for introducing to their notice a volume of "Lyrics and Elegiacs,"* submitted to us by Mr. Marcus Rickards, who, it should be mentioned, is already favourably known as the author of several previous books of verse. A casual study of the present work enables one to clearly perceive that Mr. Rickards is a close observer and student and moreover a Nature Lover. His subjects are of the simplest description, but upon these he constructs his verse with no little grace and with much felicity of sentiment.

In the "Journal of the Bombay Natural History Society," Anglo-Indians have a scientific quarterly of the very highest merit. It is edited by the hon. secretary of the society, Mr. H.

* "Lyrics and Elegiacs," by Marcus S. C. Rickards. London : George Bell & Sons, York Street, Covent Garden.

M. Phipson, C.M.Z.S., and very creditably printed by the Education Society's Press, Byculla, Bombay, but the excellent coloured plates are, we notice, of European re-production.

RECORDS AND OBSERVATIONS.

MAMMALS.

Tape-worm in the wild rabbit.—In answer to "Rambler's" question of last month, the tape-worm appears to have been more commonly observed in the rabbit during the past year than is usually the case. Several of my acquaintances have remarked to me upon its frequency. Tape-worms are of fairly common occurrence in this animal; for in the life-history of a tape worm there are two hosts; and the rabbit is the *primary* host of the worm in question, scientifically known as *Tænia serrata*. The secondary host is the dog, which animal attains it by eating a rabbit or a hare, for this worm is also found in the latter animal. Doubtless the past warm season afforded peculiarly favourable conditions for prolonging the life of the proglottides, thus increasing the ova, and thereby the numbers of the worm.—E. W. SWANTON, Bratton St. Maur.

BIRDS.

Razorbills at Rotherhithe.—We have lately received a large number of razorbills (*Alca torda*) for preservation; probably on account of the severe weather which we have experienced on the East coast, but it is a rather uncommon occurrence for them to appear so far up the river—R. T. COOK.

The Blue Tit.—This very interesting bird is not at all particular as to the site of its nursery. I once saw the nest of a pair of these birds which was built in a cupboard in a shooting cottage; the hole through which they brought the mass of materials for building was not more than an inch and a half in diameter. The nest was built round a tumbler and here they reared their family. I was once cutting a blue tit's nest out of a willow tree, a good piece of which had to be cut away before it could be got at, and I did not think for a moment that the old bird was on, but when I reached the nest it was covered with chips and while clearing them away with my hand I felt a sharp peck, and drawing my hand away, out came the bold little matron and flew pecking in my face. In the nest were six eggs, which I left, and getting a large piece of bark I fastened it over the hole which I had cut, and in three days the eggs were hatched. This will show what a bold little bird the blue tit is—MAJOR H. MOYLAN.

Rooks building in January.—On January 21st I was very much surprised to see a pair of rooks building their nest in one of the trees of a small rookery in the dockyard here. The erection of the nest was watched with intense interest by some of the tenants of the rookery, and was about half finished when, for some unaccountable reason, the building operations ceased and the whole community broke up and went their respective ways, none of them having returned up till now. Surely this is a most unusual occurrence? Instances have been recorded in the *Field* of rooks repairing and sometimes building, their nests in October and November and occasional instances are quoted of eggs being laid and the young hatched out. March, however, is usually the time to look for rooks building and I have never heard of this happening in January. Some allowance must of course be made for the unusually mild weather lately.—R. E. V., Portsmouth.

Inter-breeding of house sparrow with tree sparrow.—In answer to "Rambler's" query I do not know of any authentic account of the inter-breeding of these species, though both are common in this district. It is very probable such instances have occurred, and "Rambler" cannot do better than ask the question in the "Zoologist."—E. W. SWANTON, Bratton St. Maur.

INSECTS.

P. rapæ in January.—An unusual occurrence of the small cabbage white happened here on January the 23rd, when one which had evidently been hibernating took advantage of the few hours' sunshine to expand its wings again.—A. I. CLARKE, Gloucester.

Early records from Reading.—On January 13th, I took *Hybernia rupicapraria*, and on the 21st *H. leucophearia*, and *Phigalia pedaria* (*pilosaria*). My earliest records previously were:—*Rupicapraria* Jan. 10th, 1890; *Leucophearia* Feb. 1st, 1889; *Pedaria* (*Pilosaria*) Jan. 24th, 1892.—W. E. BUTLER, Hayling House, Oxford Rd, Reading.

Insects and temperature changes.—I should like to report that on January 24th, after two sharp frosts and with the ground quite hard, my father found the following lepidoptera on the "Bishop's Palings":—*Pterophorus monodactylus*, *Hybernia defoliaria*, *H. rupicapraria*, *H. leucophearia*, and *Cheimatobia brumata*. All but the *H. leucophearia* were worn, and had stood the frosts, but this species had evidently emerged the same day as taken. Now, during the day, the wind shifted from N.N.W. to S.W., and it turned much milder, and thus is given a very good illustration of how sensitive the developed pupa in the ground must be to the slightest changes of temperature, so that sometimes I am inclined to think they even anticipate the favourable opportunity for emergence.—H. J. TURNER, 13, Drakefell Road, Hatcham, S.E.

Coleoptera Notes from Reading.—The following beetles I have taken here last season:—*Callidium variabile*, *Anchomenus piceus*, *Bruchus rufimanus*; *Oncomeria femorata* turned up well at sugar, I took twenty-five one night; I also took *Sphodrus leucophthalmus*, and *Pristonychus subcyaneus* in my own cellar.—W. E. BUTLER, Hayling House, Reading.

Coleoptera at Deal in September, 1893.—While staying a fortnight at the above locality, I took the following beetles:—*Masoreus wetterhali*, *Calathus flavipes*, *Harpalus servus*, *H. anxius* (common), *Demetrias monostigma*, (common), *Philonthus lepidus*, *Ocypus similis*, *Aphodius porcus* (on a stone wall near the sea), *Hypera fasciculata*, *Otiorhynchus atroapterus*, *Helophilus gibbus* (abundant) and many others. All the above were taken at roots of grass and in the moss on sandhills.—H. FORD, Junr., Berkshire Villa, Crowhurst Road, Brixton S. W.

Coleoptera in the Eastbourne district—The following are the names of a few of the coleoptera I obtained in the Eastbourne district during the interval between Christmas and the middle of January:—*Philhydrus marginellus*, *P. ovalis*, *Philonthus thermarum*, *Lathrobium longulum*, *Sunius intermedius*: all taken in the neighbourhood of Polegate, along with a host of less noteworthy species, as *Philonthus cupreus*, *P. sanguinolentus*, *Anacæna limbata*, *A. variabilis*, *A. bipustulata*, *Bryaxis fosculata*, *B. juncorum*, *Rhagium inquisitor*, *Bembidium guttula*, *B. unnamerheimi*, *B. obtusum*, *Tachyporus humerosus*, *T. pusillus*, etc. On the chalk hills my only capture of note was *Haltica consobrina*. I may add three of my summer captures: *Cymindis axillaris*, *Licinus depressus*, and *Phlaeotoma stephensi*. Among diptera, too, I took *Eristalis libatrix* and *Tachina nigricans*, the latter probably new to Britain, according to Dr. Meade—W. W. ESAM.

A Note on the Lepidoptera of Blundell Sands.—Having met with an accident in July 1892, I was at home for a few weeks during which time my sons brought in any amount of larvae of the different species. On August 21, one

of my boys, on coming in to his dinner, told me there was "a lovely butterfly outside; he had never seen anything like it before; it was a lovely yellow." I said "it must be *Colias edusa*! Go out and I will give you sixpence if you catch it." At the same time I did not believe it to be in existence in these parts. However he caught it and it proved to be *C. edusa*. Whereupon we turned out and were most successful in obtaining several specimens (we did not see *Helice* or *Hyale*), many having been missed on account of the large quantities of *Atalanta*, *Io*, *Urticea*, and *Cardui*, to say nothing of the swarms of *P. gamma* which were flying about in thousands. I took a large quantity of them to feed a few pets I have in a vivarium, in the way of green frogs, natter-jack toads, Italian toads, and a young bull frog who enjoyed them extremely. When he gets a little larger I expect he will require a mouse or a young bird to keep him going. Earlier in the season larvæ of *B. trifolii* were abundant. These have not been seen for some time in any quantities on the sand hills here. The larvæ of *S. populi*, *S. ocellatus*, *Vinula*, *Zizzac*, *Dictæ*, *S. apiformis*, *Stellatarum*, etc., were most abundant. *Apiformis* caused great destruction to my small poplars. *Salicis* followed up and eat nearly every leaf off them. *Zonaria* were very abundant in March. Now we come to 1893. The weather, as every one will remember, was intensely hot. *Zonaria* again appeared in March plentifully. Only about one *C. edusa* was seen, although my boys looked for it all through August and part of September. No *Cardui*, no *Io*, but *Urticea* and *Atalanta* very abundant. Very few larvæ of *S. populi* or *S. ocellatus*. No signs of either larvæ or imaginæ of *Stellatarum*; and as for *Gamma* it was a rare moth. Very few *Apiformis*, and *Salicis* very scarce. Only a few pupæ of *Zizzac* and none of *Dictæ*. *B. trifolii* appeared on the wing, but not in great abundance; it is always a rare insect in these parts. Can anyone account for this extraordinary difference of seasons?—H. H. MERRIMAN.

MOLLUSCS.

Southampton Slugs.—At Southampton I have taken eleven species and three varieties of slugs, viz:—*Limax maximus* L. *Agriolimax agrestis* L: (with the var. *griseus*, Ckll, *A. lavis*, Muller). *Amalia sowerbyi*, Fér: (*A. marginata*, Brit. Auctt.) *Arion empiricorum* Fér: (*A. ater* L.) *A. subfuscus* Drap. *A. hortensis*, Fer: (with vars: *griseus*, Moq. and *cæruleus*, Clige). *Arion fasciatus*, Nills: (*A. bourguignoni*, Mull.) *A. celticus*, Pollonera, 1887. *A. cottianus*, Pollonera, 1887. *A. elongatus*, Collinge, 1893, (sp. n.). Of these *A. cottianus*, *A. celticus*, and *A. elongatus* are recent additions to the British Arionidæ. This list will doubtless be interesting to Hampshire malacologists.—E. W. SWANTON, Bratton St. Maur.

Helix arbustorum in South Wilts.—This species was first recorded for Wilts in 1891, Mr. T. R. Longhurst taking it at Netherhampton, near Salisbury (see "Additions to the L. and F. Moll. of S. Wilts," *The Conchologist*, Vol. I.) Since seeing specimens from the above locality, Mr. C. D. Heginbothom has shewn me a most interesting series taken at Devizes; including:—

Var: *alpestris*, Ziegel: Is not this variety synonymous with var. "alpicola"?

Var: *conoidea*, Westerl. With a major form.

Var: *major*, Pfr., synonymous with Clessin's var: "excelsa."

Var: *minima*, Pfr., (=*minor* Westl.), one example only, and it was a conoid form.

Var: *flavescens*, Moq:

Var: *marmorata*, Roff. (=*fuscescens*, D. and M.)

Var: *Repellina*, Charp:

Var: *pallida*, Taylor (?)

Enough has already been said respecting the Conchological Society's List of Land and Freshwater Mollusca; in it the varietal names of *Helix arbustorum* well illustrate the careless manner in which it was drawn up. We read that

Var : *canigonensis*, Boubée, = Var : *repellini*, Taylor. What is Taylor's Var : of that name? There is the well-known variety *Repellina*, CHARP: with the shell more flattened, thin, transparent, and pale. Again, var : *fuscescens*, D. and M. = var : *marmorata*, Taylor. We know the variety *marmorata* ROFFR., with the shell similar to type, but destitute of bands. Var : *cincta*, Taylor, = var : *pallida*, Taylor. Taylor's variety *pallida* is described as "shell yellow or whitish yellow with bands" and might be considered as a form of the type approaching the variety *flavescens*, Moq., with the shell yellowish, nearly unicolour—E. W. SWANTON, Bratton St. Maur.

PLANTS.

The absence of fruit on the Rowan.—It is a remarkable incident of the season of 1893, that there was an almost complete absence of berries on the rowan, or mountain Ash in this part of the country. It is the only case of this which has ever occurred during the whole course of my observations. This plant having on all other occasions, whether in a warm, or in a cold season, always produced abundance of fruit. There are various shades of this plant to be found here, differing more or less in various ways, and some of these are naturally more prolific than others and vary in quantity and quality of fruit, and they might produce more or less, varying in degree with the seasons as these were suited for their peculiar conditions. In the present case the most likely cause for the failure is to be found in the peculiarly severe heat and drought about the time that the plants were in blossom. The fecundity of the produce having been destroyed at that stage.—WILLIAM WILSON, Alford Aberdeen.

FISHES.

A large sunfish.—The *Los Angeles Herald* records the capture of what it describes as the largest specimen of the sunfish known. A party were fishing recently some five miles off the coast of Redondo, California, when their attention was arrested by what they at first supposed to be a small whale. On approaching it, however, it was discovered to be a large sunfish lying on its side, evidently enjoying the warmth of the sun. On the nearer approach of the party it dived beneath the boat, coming to the surface a few yards on the other side. The boat was turned, and bore down on it, when the fish was struck by the bow and thrown upon its side. A jew-fish hook was stuck into its mouth, and, gaining its equilibrium, the fish sped away till it had taken out 150 fathoms of line. After a long struggle a rope was made fast under its fins and attached to the mast. The boat was nearly dragged down by the throes of the fish, but finally it was towed to Redondo and landed on the beach. It measured 11ft. from the dorsal to the anal fin, was 8ft. 2in. in length, and weighed nearly 1,800lbs. If these measurements are accurate this is the largest of the species ever caught. The largest heretofore recorded is in the British Museum. This latter example measures 7ft. 6in. in length, and was captured off the coast of Dorsetshire in 1846.

FIELD CLUBS AND SOCIETIES.

HASTINGS AND ST. LEONARDS' NATURAL HISTORY SOCIETY—A meeting of the members of the above society was held on Thursday evening, January 25th, in the Brassey Institute, when an interesting paper on "Mollusca" was given by Mr. A. G. Alletsee, M.C.S. The subject was illustrated with specimens and diagrams.

NORTH KENT ENTOMOLOGICAL & NATURAL HISTORY SOCIETY.--A lecture on "Slugs and Snails" was delivered on Friday the 19th January at the Holy Trinity Schoolroom, Beresford Street, Woolwich, under the auspices of the above Society, Mr. A. S. Poore occupying the chair. The lecturer, Rev. J. N. Horsley, described the habits, etc., of many of the species in his well-known style and related many anecdotes concerning his own career as a naturalist and he illustrated his remarks by handing round specimens. He also pointed out to those of his audience who had any inclination towards any branch of Natural History how well they were situated ; they were within easy distance of localities for the majority of the British Land and Freshwater shells and also for the study of other branches of Natural History ; they also had in their midst a Society whose members were all willing to give the benefit of their experiences and concluded by saying that he thought a hobby tended to elevate a man. Mr. Cozens in proposing a vote of thanks to Mr. Horsley expressed the pleasure he had experienced by the instructive lecture they had just heard. Mr. W. Turner seconded the vote in a vigorous speech and the lecturer having responded in a brief speech the proceedings were closed by a vote of thanks to the chairman.

The usual fortnightly meeting of the society was held at the Coffee Tavern, Woolwich, on January 31st, Mr. Potter presiding. Mr. J. Cooper was unanimously elected an associate. Exhibits were made by the following members :—Mr. A. Old, preserved snake from the West Indies ; Mr. Allbury, specimens of the locust and gigas species ; Mr. Poore, specimens of British land and freshwater shells ; Mr. Fieldhouse a number of specimens of minerals and fossils and sections of various local woods. Mr. H. Brougham gave notice that he would read a paper at the next meeting on "How I became an Entomologist." Mr. Poore also gave notice of a "Talk about Conchology," which he would give at the second February meeting.

LAMBETH FIELD CLUB—January 22 : Mr. Perks lectured on the planet Venus for the greater part of the evening, but the subject proved too much to be properly dealt with in a single lecture, and the remaining notes were postponed for a future occasion. Before commencing, the lecturer called attention to the fine specimens of "petrified wood" from Arizona, North America, now on view at the offices of *Pearson's Weekly* in Henrietta Street, Covent Garden ; these specimens included an exceptionally well-preserved stump of about two feet across and three feet high, and were supposed to owe their preservation to an eruption of hot springs at some remote epoch.

February 5th : Mr. Rivers exhibited some photographs of a huge whale, seventy-six feet in length, recently on view at the Agricultural Hall, Islington ; it was recognised to be a rorqual, a species sometimes attaining 100 feet in length. A long but entertaining discourse was then given by Mr. A. P. Wire, of the Essex Field Club, his subject being "A Piece of Marble," but limestones generally entered as much into his remarks. The test for a calcareous rock, he said, was a strong acid, hydrochloric acid being very suitable. When treated with the acid, a bubbling of the part affected by it ensued, this being caused by the escape of carbonic acid gas, one of the constituents of all limestones, chalks, and marbles. Iceland spar, so valuable to the optician when pure, also showed the characteristic re-action. A piece of marble or of limestone was chemically a carbonate of lime expressed as Ca_3CO_3 , or one part of calcium, one of carbon, and three of oxygen. The application of heat or of an acid split this up into CaO and CO_2 , the latter being carbonic acid gas, and the former oxide of calcium, or lime, which was well-known as the substance kept in cases containing specimens, in museums, for the purpose of absorbing moisture, for which it had a great affinity. The absorption of water was attended by the production of much heat, so that rain falling on exposed lime in a cart would ultimately set the latter on fire. Carbonic acid gas, or as it

had now been re-christened, carbonic anhydride, was then dealt with, and the impossibility of combustion in this gas experimentally shown. As was well known, it proved fatal to animal life when present in the air in sufficient quantity, and as it was given off by the lungs at each expiration, and also from gas and other flames, ventilation was absolutely a necessity in all rooms, shops, railway carriages, etc. This gas furnished us with a means of painlessly putting to death any animal we desired to kill, for its first effect was soporific, the animal dying while asleep. In this way mice and rats could be mercifully disposed of, and at the Dogs' Home, Battersea, this method was always employed in destroying all dogs it was deemed necessary to kill. The gas was heavier than air, and so could be poured from one vessel to another, and a soap bubble would float on it. After speaking, incidentally, of the remarkable discoveries of Prof. Dewar, the lecturer next discussed carbon, an element found commonly in all organic bodies, but seen in its purest form in the diamond, while coal and black lead (graphite) contained it in large amount, and it was of course one of the constituents of limestone and marble. Carbon was one of the most lasting of substances, which explained the great durability of a charred gate-post. The remainder of the lecture was devoted chiefly to the consideration of the occurrence of calcareous compounds in nature, shells being shown to consist mainly of carbonate of lime, extracted, in the case of marine mollusca, from the sea water, in which it occurred by reason of its being brought down by rivers. Carbonate of lime deposited on the roofs of caverns by the percolation and evaporation of water formed the beautiful masses known as stalactites. The chalk and limestone rocks generally had been built up originally by marine animals. When water contained lime in solution, the addition of carbonic acid gas produced a precipitate, and as this gas was contained in the breath this effect was easily brought about by blowing through a tube partly immersed in the water. Much amusement was caused by the lecturer's imitation of a quack-pill vendor he had once encountered, who sought to turn this experiment to account by pretending that the precipitation showed the bad state of the lungs of the breather, who was thereby induced to purchase the remedial preparations offered!

On March 5th Mr. H. Wilson will lecture on "The Sun" (with lantern illustrations), and on the 19th, the president, Mr. G. Masters, will read some additional notes on "Garden Flowers," which formed the subject of one of his recent lectures before the club.

TO CORRESPONDENTS.

G. W., Clapham.—We mentioned the fact of mice destroying eggs in No. 11 of the N. J. (page 128); there is little doubt that they eat the contents, but as they more commonly invade "domed" nests it is probable that their purpose is also to utilize them as domiciles.

E. B. L., Finsbury Park.—M. C. Cooke's "British Fungi," with coloured plates, price 6/-, is the best book for you. It can be obtained from any Natural History agent or bookseller. Fungi may be preserved in weak (diluted) spirits.

W. G. C., Thetford.—We have many articles in hand and could not promise insertion for two or three months.

M. B., Abingdon; E. B., Ipswich.—Shall be inserted.

We have received a price list of rare British birds' eggs from Mr. T. L. Cummins, of Bishop Auckland; and a catalogue of coleopterological works from J. B. Bailliére et Fils, 19 Rue Hautefeuille. Paris.

ERRATA.—February No., page 109, lines 18 and 21, for "Fir" read "Fér."



DUPLICATES.—*Satellitia*, *Vaccinii*, *Gothica* (bred), *Chi*, *Stabilis*, *Cruda*, *S. murana*, *Cruciana* (bred). *Desiderata*: very numerous.—Wm. Newman, 21, Russell St., Darlington.

DUPLICATES.—*Adippe*, *linea*, *C-nigrum*, *macilenta*, *litura*, *vaccinii*, *satellitia*, *pistacina*, *protea*, *palleus* (all fairly perfect), *betularia*, *marginata*, *didymata*, *rufina* (slightly rubbed), *Calopteryx splendens* and *virgo*: *S. coryli* and *obesus*, *E. vorax*, *S. atrata*, *A. inquinatus*, *P. subcyaneus*. What offers. C. Morley, High St. Ipswich.

DUPLICATES.—*Chrysomela polita*, *Hermoeophaga mercurialis*, *Rhizobius litura*, *Eriphelinus acridulus*, *Timarcha coriaria*, *Trachyphloeus scabriculus*, *Apion ononis*, *Apion ononidis*, *Phyllobius argentatus*, *Polydrosus pterygomalis*, *Micraspis 12-punctata*, *Coccidula rufa*, *Anthrobium ophthalmicum*, *Philonthus politus*, *Stenus bimaculatus*, *Blechius maurus*, *Bembidium mannerheimii*, *Metabletus obscuro-guttatus*, *Pterostichus strenuus*. *Desiderata*: British Coleoptera.—G. D. Turner, "The Grampians," St. Helen's Road, Hastings.

Duplicates.—British Coleoptera, *Elaphrus riparius*, *Anchomenus fuliginosus*, *Pterostichus strenuus*, *Staphylinus maxillosus*, *Ocypus ater*, *Nitidula bipustulata*, *Dermestes undulatus*, *Aphodius nitidulus*, *Corynetes ruficollis*, *C. rufipes*, *Cis. boleti*, *Hylastes palliatus*, *Rhyncolus cylindroiostris*, *Trachyphloeus myrmecophilus*, *Hypera fasciulata*, *Coccinella 18-guttata*, *Heliopathes gibbus*, *H opatrum sabulosum*, and others.—H. Ford, Junr., Berkshire Villa, Crowhurst Road, Brixton, S. W.

WANTED.—Dredgings and clays containing Foraminifera. Will give in exchange various dredgings, named specimens, or slides and material in other departments of microscopy. Correspondence with parties interested in the subject of Foraminifera desired.—F. S. Morton, No. 158 Cumberland street, Portland, Maine, U. S. A.

WANTED, a Microscope.—Can offer a good exchange in rare British marine shells, polished geological specimens of Devonian corals and spongiforms and unmounted micro objects and material, etc.—A. J. R. Slater, 43 Northumberland Place, The Strand, Teignmouth.

WILL Exchange flint implements (large quantity of Thetford and Santon Downham types) for duplicates from other parts. Also exchange duplicates with other collectors in fossils minerals and shells.—W. G. Clarke, King St., Thetford, Norfolk.

DUPLICATES.—Eggs of spotted flycatcher, greenfinch, yellow hammer, lesser tern, magpie, mistle thrush, moorhen, guillemot, razorbill, common gull, coot, and many others. *Desiderata*: wren, jay, snipe, nightingale, rook, kittiwake, hawks, owls, and many common sorts.—G. White, 46, Grafton Sq., Clapham, London.

WANTED.—American or Foreign Birds' eggs in exchange for British eggs or Butterflies.—Mrs. Benyon, Stueley Hall, Huntingdon.

WANTED.—Goebel's "Outlines of the Classification and special Morphology of Plants." Exchange Classic Italian works, Etruscan, Greek, Latin, &c, or state requirements.—Joseph Wallis, Claremont Villa, Deal.

FOR exchange.—"Practical Taxidermy," by Montagu Brown, 2nd. edition, published in 1884, almost new. What offers in Foreign Land Shells?—Crane, 55, Brooke Rd., Stoke Newington, N. N.

OFFERED.—94 maps (in 1 vol.) issued in connection with Alison's Europe, by A. K. Johnston, F.R.G.S. *Outing*, April 1891 to Oct. 1893, in 4 vols. bound, 1 unbound; vol. XIII the *E.M.M.* and vol. X *The Entomologist*, bound together; vol. XI *The Entomologist*; 2 vols. *Intellectual Observer*; vols. IV & V *Review of Reviews*. Wanted: British Coleoptera, Aculeate Hymenoptera, Hemiptera.—T. M. McGregor, The Mills, Horse Cross, Perth, N.B.

LEPIDOPTERA.—I have 250 specimens of Lepidoptera, 40 species. Exchange for land and fresh-water shells.—A. Broadley, 2, May street, Keighley, Yorks.

OFFERED.—Cassell's Book of Birds, 4 vols., beautifully bound in 2, 40 coloured plates. Exchange birds' eggs, marine shells, British insects, or offers.—C. S. Coles, 61, Barrington road, Brixton, s.w.

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A Monthly Medium for Collectors and Students of Natural History.

ADDRESS OF OFFICE: 21, PROSPECT ROW, CAMBRIDGE.

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GREASE.

By H. GUARD KNAGGS, M.D., F.L.S.,

Author of "The Lepidopterists' Guide for the use of the Young Collector."
Formerly one of the Editors of "The Entomologists' Monthly Magazine."

AMONG the supporters of your excellent journal, you probably number many whose delight is to collect butterflies and moths, who take a pride in the neatness of their collections, and to whom the sight of grease on any of their treasures is an absolute horror, for they know not where it will stop. There are various theories about this same grease, but, in my opinion, it is stored up for an all-wise purpose, namely, to provide against starvation, to protect against cold and wet, to supply a reserve of energy, to be expended in flight, etc., and possibly also to take part in the function of egg laying; but for whatever end Nature intended it, it certainly becomes an eyesore when visible on the surface of our specimens.

With a view to setting the minds of your readers at rest, by showing them that the approach of the enemy need not be dreaded if only they will take timely steps to prevent or cure the evil before the mischief becomes irreparable, I have put together the following notes, in the hope that they may prove serviceable. The detergent fluid which is employed, in my plan of eradicating grease, is ether. Methylated ether answer perfectly is far cheaper than benzine, has twice the extracting power, and moreover, owing to its volatility, possesses the further merit of giving freshness to the fur of the specimen which has been submitted to its action. It is inflammable, granted; so too, is benzine, and there is little to choose between the two on that

score, but the only times of danger are when the stopper is out of the bottle, in order that fresh ether or specimens may be put into it, or when soiled ether or specimens are being taken out of the vessel—consequently, for the minute or so occupied in these operations all naked lights should be kept out of the way. Mind, this is merely advice ; in practice if I wish to work at the ether by gas light the only precaution to be taken is to avoid leaving the ether bottle unstoppeder for a moment longer than is absolutely necessary, and not to get too near the fire or gas—I should do precisely the same thing with benzine.

Grease under ordinary circumstances first shows itself in the abdomen, then spreads it whatever may be in contact with the greasy surface, at one time to the paper of the setting boards or cabinet at another to the hind wings if they have been set too closely to the body, otherwise it creeps along the surface above and beneath till it reaches the insertion of the wings and the surface of the thorax, over which it spreads. So far, comparatively little mischief is done ; it is when the grease has arrived at the pin that the real work of destruction commences ; then the last act takes place, the obnoxious fluid, following the course of the metal, for the first time enters the thorax, wherein in due course it forms a green salt of copper which distends and distorts it in such a manner as to twist the wings quite out of their normal position. In such a case it is easy enough to remove the grease and salt with ether, but the wrecked thorax is beyond remedy and unless the specimen be one of value it is not worth while to attempt its restoration. According to the extent or the grease, the size of the insect, the age of the specimen and whether it is the whole or part or merely the bodies which have to be treated, so will the use of the ether be modified.

In the treatment of bodies alone, the most useful vessel to employ is perhaps a "sample bottle" which is a glass tube with a flat bottom ; the mouth of this has to be fitted with a good soft cork and this again requires to be covered with one, two, or three thicknesses of bladder, which has been freed from grease by wiping and immersion in ether, and afterwards macerated in water so that it may be strained tightly over the cork and tied in a tuft at the top, by which means a perfectly fitting stopper is obtained ; this being very necessary to prevent waste of the fluid by evaporation. Then the bodies of such medium-sized species as are only affected in that part, and of all large species above the size of an average *Noctua*, even when the whole insect has become disfigured, are broken off, each being pinned with a distinguishing ink written ticket, dropped into the tube, well covered with ether, corked tightly, and put away in a cool place from three to ten days at the end of which time the bodies are placed in a clean bath of ether and left for a second soak which is as a rule

sufficient, but it is always adviseable to give one more shorter bath to rinse off any remains of surface grease from the last bath. The exceptions to breaking off the bodies are: Sometimes where the hind wings and body are alone at fault it is adviseable to break them off together—Sometimes it is not desirable to detach a body of a larger species, as in the case of a specimen saturated all over the surface, but presenting a thorax the fur of which does not well overlap the abdomen; here it is recommended to insert a small drill under the eleventh segment, beneath the specimen near the tail end, push it into the cavity, stir up the contents and withdraw it; by this means the fluid will be admitted to the interior and come into direct contact with the grease.

The next modification of the process is when whole specimens from the smallest up to the size of a small noctua, and on rarer occasions larger species, have to be operated upon—here a different vessel is needed; a *perfectly fitting* stoppered wide mouthed “squat” bottle is the best for the purpose, but the expense may be objected to—in which case a suitable bottle may be picked up at the grccers’ or the rag shop, and fitted with a bung, well covered with bladder in the manner already mentioned; this vessel must now be furnished with a stage composed of a piece of sheet cork, which will easily enter the mouth and loosely lie on the bottom, it should be loaded with a strip or two of lead to sink it, and at one end there should be a little cork float, attached with a half inch tether of thread or water cord, by which to lower it into, and lift it out of the vessel; the insects are then pinned on to this stage in such a way as not to touch one another, the stage is then placed in the bottle, ether is poured in to cover it, the stopper replaced, and the whole put away for subsequent treatment as in the case of the detached bodies already referred to.

Lastly, we have to consider the cleansing of the wings and thoraces of the larger species, from which the bodies have been removed. These, if distortion be absent or only slight, may be bedded on to magnesia, saturated with ether by dropping the fluid upon them, then quickly covered over with more magnesia, and set aside for twenty-four hours. Three or four such applications will generally suffice, since in such cases the grease is merely superficial. Butterflies are quickly restored to their natural tints in this manner. When we are satisfied with the result, it will of course be necessary to shake and blow off the powder, and give a gentle brush up with a camel’s hair pencil.

With regard to the time at which the above operations should be conducted, no attempt should be made till after the insects are thoroughly set and dry—then, if they show signs of grease, the sooner they are attended to the better—but while some specimens show signs of disfigurement even a few days after they have been killed, others have been known to go twenty years before exhibit-

ing any indication—this is probably due to their having been kept in a cool dry apartment, for it is surprising how soon warmth and humidity will start the grease—still, there are a large number of species the males of which, particularly if bred, are pretty sure to go wrong at one time or other—among which may be mentioned the “Brimstone,” “Admirals,” “Tortoise-shells,” and “Fritillary,” butterflies, nearly all the “Hawk Moths,” all the “Clearwings,” most of the “Bombyses,” several of the “Prominents,” besides certain “Geometers,” “Noctuæ,” “Pyrales,” and Micros too numerous to mention. Such being the case, many collectors take steps to eradicate the enemy even before any external signs are visible, on the principle, I suppose, “that a stitch in time saves nine.”—*Folkestone, Jan., 7th, 1894.*

A BUTTERFLY'S WINGS.

By the Rev. HILDERIC FRIEND, F.L.S., Author of “Flowers and Flower Lore,” etc.

CHAPTER III.

OUR SYMPOSIUM, continued.

There had been a brief digression in our conversation. The wind had risen, and brought on its wings hard crystalline pellets of glaciated rain-drops, which, beating fiercely against the window panes, had quite startled my Grecian visitor. I explained that we were just then experiencing a real English hailstorm, whereupon Theophrastus exclaimed that he had much ado to understand how it was that the inhabitants of Great Britain could possibly survive the trying extremes of the weather to which we seemed to be ever liable. I endeavoured playfully to point out to him how the theory of evolution assisted us in grasping the problem, and assured him that it was a case of the survival of the fittest. He was sufficiently familiar with our modern researches to know that I was alluding to the theories recently put forth by Darwin, and complimented his neighbour on his valuable discoveries. It was now Paley's turn to address us, seeing that in point of age he came next to the learned Swede who had previously entertained us. The venerable archdeacon assumed that his biography could have little interest for such eminent savants as he saw around him, and would gladly be excused. The Agape, however, as we assured him, would be totally incomplete without a recital of his personal narrative, and he therefore consented to lay before us a brief sketch. It ran as follows—as I find from my notes taken on the occasion :

"My father was a Yorkshireman. Of this fact I am not a little proud, for it has not seldom been maintained that Yorkshire has yielded some of the most robust intellects which our country has ever known. He was residing at the time of my birth, in 1743, at Peterborough, but was shortly after appointed to the important post of head master of King Edward's School, at Giggleswick. Of this noteworthy establishment I could say much, for it was here that I first imbibed that love of learning, and especially of natural science, which influenced the whole tenour of my after life. In 1758 I was entered in Christ College, Cambridge, but my early student days were sadly misspent."

"Is it not a fact that you graduated B.A., coming out as first wrangler in 1763,?" enquired Darwin, who, having himself been a student of this college, had been interested in Paley's career. "That is so," replied the archdeacon. "I was then twenty years of age, and three years later, proceeded to take the degree of Master of Arts, whereupon I became a fellow and tutor of my college. I retained the tutorship for a period of ten years, having in 1767 taken holy orders. After a decade spent in lecturing to the students I married, gave up my fellowship, and went to reside at Musgrave, in Westmorland. Henceforth my time was devoted to the Church."

"We owe much to you, Sir," I remarked, "for the clear and forcible style in which you have presented your arguments in defence of the faith, for your logical mode of reasoning, and the clearness of your illustrations."

"I must be allowed," returned the divine, "to make a remark or two respecting my works. The compliment you pay me, is quite undeserved. I do not claim to have been an original discoverer or thinker. Nearly the whole of my work was suggested by others, and in some instances I have been little more than interpreter of other men's thoughts. I shall not need to tell you that, while I believe my work on *Natural Theology*, for which I was greatly indebted to a Dutch philosopher of the Seventeenth century—was exactly suited to the needs and spirit of the age in which I wrote, modern writers on teleology have shewn that my arguments must to a large extent be recast, if not indeed renounced. Against this I make no complaint. Every age views the facts and phenomena of life in a new and different light, and it would indeed be pitiful, if, as the unbeliever shifts his ground the champion of the truth, the Christian apologist, could not marshal his forces with sufficient skill to meet the enemy of the truth, and drive him from the field. But already I have said too much, and I shall gladly hear what my brethren have to say."

It was interesting, during this conversation, to observe the pleasant play of features, which my guests exhibited. Here was a distinguished trio of Cambridge men, Paley, Wordsworth, and Darwin. They were, it is true, never together at Cambridge as

students, but Darwin had studied at Christ's, where Paley was educated, while his grandfather Erasmus had been a student at St. John's, where Wordsworth entered in October, 1787, ten years after Paley's departure from the university city. They could go over the classic ground mentally, with intense delight, and it was easy now for the poet of Nature, to take up the thread.

"I was born" remarked Wordsworth "in the year 1770, on the seventh day of April, in a house still standing in the Main Street, Cockermouth. The garden behind the house abuts on the river Derwent, just below the point at which the Cocker and it are wedded. I well remember the hedgerow there, and my first sight of a sparrow's nest with its pretty complement of eggs. Equally well do I recall the pleasure I experienced when I wandered through the grounds surrounding the castle with my sister Emilie. My school days were of the happiest. I was allowed the greatest freedom, and as I roamed among the hills and vales of this charming lakeland, I imbibed such a love for nature as nothing could quench. Through the liberality of my two uncles I was able to spend some years at Cambridge. Here I found myself surrounded by the shades of Spenser, Ben Jonson, and Marlowe; Dryden, Cowley, and Waller, Milton, George Herbert, and Gray; and though the contrast between the flat fenland, and my native county was extreme, I could still peruse

"The common countenance of earth and sky—
Earth, nowhere unembellished by some trace
Of that first Paradise whence man was driven."

For me the every day objects have always had peculiar fascination and charm. The lesser celandine the primrose and daisy, the butterfly, leech, hawk, mountain and mere, each had for me some attraction, and seemed worthy of my muse."

"And in the matter of literary instruction, how fared you?" enquired one.

"I took my degree of Bachelor of Arts in 1791," replied the poet, "and quitted Cambridge with no certain aim. From the law I felt a natural shrinking, and for the high office of the Church I was naturally unfit. The French Revolution was filling Europe with fear and hope. I became interested, absorbed, and was well nigh won over to the ranks of the Republicans. First reason, then nature conquered me anew, and henceforth I became a loyal and devoted learner in the school of science."

How tortuous the path which the noblest minds have traversed! Darwin had followed the narrative of the speaker with close attention, and though he confessed that his love for poetry dwindled down to a mere shadow, he averred that he could thoroughly appreciate the spirit of devotion which stirred his brother student's breast. He now took his turn in the conversation.

"To return to Cambridge," continued Darwin, "how well I remember one little incident which illustrates the passion I felt in those days for any curious object, any new thing in the realm of nature. Hunting one day among the bark of an old tree for beetles I suddenly came upon a prize which was instantly captured. A second specimen appearing before I could open my box I seized it also and was about to consign the pair to captivity when yet another specimen presented itself to my gaze. Slipping one of the captured specimens into my mouth that I might have a free hand I immediately became aware of the fact that the beetle was possessed of a means of self-protection. It instantly ejected a nauseous liquid which filled my mouth with the most repulsive taste and odour, so that I was obliged to spit my treasure out!"

Such was the enthusiasm of the future world-renowned naturalist. This trifling incident, which many another collector could easily watch from his own personal experience, excited such interest among my guests, that they begged the story-teller to recite other experiences. He soon glowed into a fresh enthusiasm, and we were all entranced as he recounted in vivid, and yet modest language, such as the truly great ever employ, the incidents connected with his appointment to the *Beagle*, his voyage as naturalist with Captain FitzRoy, and the valuable experience he gained thereby. I drew his attention to the fact that the *Beagle* was recently used as a training ship by the Japanese, and was lying at Yokosuka, a naval station in the Bay of Yedo, not far from Yokahama. We then induced him to narrate to us how he came to settle at Down, and carry out the quiet plodding work of his life, amidst great physical weakness, till he came to be regarded as the prince of modern naturalists. His account of the work done among flowers, the pains he took to establish his theories respecting the fertilizing of plants, his investigations into the habits of the earthworm and the insectivorous plants, were of intensest interest, and we were all sorry when his story came to a close. There yet remained, however, a great deal to be done, and I shall next recount how Theophrastus set forth the account of the butterfly from the standpoint of the imaginative Greek.

THE BIRDS OF CAMBRIDGESHIRE.

By ALBERT H. WATERS, B.A.

(Continued from page 99.)

The tiny gold-crested wren (*Regulus cristatus*) is commonest on the drier uplands east of Wilbraham, among the fir trees, where it builds its beautiful little round mossy nest in which it

lays its diminutive eggs. It is to be observed about Cambridge and the fen districts chiefly in autumn and winter, having a preference for gardens and parks, where fir and yew trees are grown for ornament. I have never seen any noteworthy varieties in the plumage of the birds, but have had very light coloured or white eggs, almost spotless. The fire-crest (*Regulus ignicollis*) is an occasional visitor, but I have never found its nest.

The wren (*Troglodytes europaeus*) is common everywhere, especially in gardens. I have known instances of it nesting in the winter.

PARIDÆ.

The bearded titmouse (*Panurus biarmicus*) is now a scarce bird with us, but I have seen it in the reeds at Wicken, and Mr. William Howlett wrote me that he saw a pair at Newmarket, May 28th, 1893. The long-tailed tit (*Acredula caudata*), breeds in the wooded part of the country, and sometimes spotless eggs occur. The great tit (*Parus major*) is common in gardens and orchards, and resides with us all the year. I have seen one or more very light coloured individuals, in which the usual black of the crown of the head and throat has become a sort of bluish or ashy-grey, and the olive-green back inclined to greenish yellow. The eggs I have found vary in the number of spots, as well as in their extent, pure white unspotted ones have been occasionally met with. The coal tit (*Parus ater*) nests in the county, but is more frequently seen in the winter. The marsh tit (*Parus palustris*) is not scarce in the fenland in the winter, and, with the other tits, comes round the farm houses. Many in the breeding season retire to the more wooded parts of the country, but some remain to nest in the fen districts.

The blue tit (*Parus caeruleus*) is, as elsewhere, a very common bird in Cambridgeshire. The boys call it "Titty Bluecap." Like the other tits, it is a perfect bird acrobat, and it is most amusing to watch its performances among the leafless twigs in the winter; now turning a somersault, then hanging head downwards, as if on a trapeze, then dropping from twig to twig, and catching the lower one in its descent, with a perfectly nonchalant air; ever on the move, peering into all the crannies of the bark, or examining the buds and profoundly indifferent as to which end of it is uppermost. It nests in all sorts of situations, under inverted flower pots, and in anything hollow, and like the great tit will sometimes appropriate other bird's nests. The eggs vary a good deal in the number and size of the dots, which sometimes coalesce and are occasionally yellowish brown instead of red, on the other hand, the dots have been in some examples very faint, and hardly perceptible, and the ground colour pure white instead of pinkish white.

The nuthatch (*Sitta cæsia*) is in the number of the birds which

breed in the county, but I am unable to say whether it is universally common. I have not seen any noteworthy variation, either in the colour of the plumage or the eggs. The tree creeper (*Certhia familiaris*), likewise, nests in Cambridgeshire. I have commonly observed it about Cambridge, but it occurs, I believe, everywhere in the county.

(*To be continued.*)

HINTS FOR THE MONTH.

LEPIDOPTERA.

Visit the sallows for the *tæniocampæ* and other moths. Several larvæ feed on the catkins of the willow and it is a good plan to collect a few and put them in a bandbox.

Scotch entomologists should look out for *Fidonia carbonaria* and *Eupithecia helvetica*. *Eupithecia satyrata*, *irriguata*, *denolata*, *abbreviata*, and *pumilata*, appear in April, also *Lobophora lobulata*, *Anticlea derivata*, *Scotodia dubitata*, *Ceropacha ridens*, *Cuculliaverbasci* (end of month) *Phæodes tetraquetana* and *immundana*.

LARVAE.

On grass: *Satyrus megæra*, *Camptogramma bilineata*, *Leucania pallens*, *Apamea gemina*, *unanimis* and *oculea*. *Miana strigilis* (in the stems), *Noctua xanthographa*, *Agrotis valligera*; at the roots. *Gnophos obscurata*, lives concealed by day under stones.

On dandelion: *Hepialus hectus*, *Euthemonia russula*, *Acidalia bisetata*, at night. On primroses: *Larentia didymata*, *M. montanata*, *T. ianthina* and *fimbria*. On lilac and privet: *Pericallia syringaria*. On birch, beech etc: *Metrocampa marginalata*. On oak; *Boarmia roboraria*; On plum: *Angerona prunaria*. On bramble: *Orgyia gonostigma*.

On low plants, or weeds: *C. caja*, *C. villica*, *C. russata*, *C. blanda*, *C. cubicularis* (chickweed), *A. cinerea*, *A. pyrophila*, *T. interjecta*, *T. subsequa*, *T. orbona*, *T. pronuba*, *N. augur*, *N. plecta*, *N. C-nigrum*, *N. triangulum*, *N. brunnea*, *N. festiva*, *N. dahlii*, *N. umbrosa*, *N. baja*, and many others.

In reed stems: *Senta ulvae*.—A. H. WATERS.

COLEOPTERA.

The sweep net will come into use this month and the student, if he wishes to add to his collection, should make good use of it, from now until the end of the season; everywhere where there is herbage the net can be used with, generally, very good results: the grassy sides in woods, lanes on the outskirts of woods where there is plenty of rank herbage, marshy places where there are reeds and rushes, are generally most productive. The umbrella

will also become very useful this month, in fact, most people know this but the Coleopterist will find other uses for it; as soon as the trees and hedges are covered with leaves they can be beaten over an open umbrella, sometimes old dead hedges are worth trying in this way. Turning over stones and clods of earth especially in damp places, will sometimes disclose "rarities."—
A. FORD.

CONCHOLOGY.

Dredging for water-shells is an easy way of obtaining many species. On oblong tin of suitable size with holes pierced in the bottom, and a handle to which is fastened a long stick makes an inexpensive and suitable dredge. Scalarid and distorted specimens are prevalent amongst the Planorbæ, notably *P. spirorbis* and *P. umbilicatus*.

A word of advice to young collectors. Do not go in for collecting merely for the sake of making as large a collection as possible; but study the life-histories, and peculiarities of the species you collect. The local distribution of shells is a subject of peculiar interest, the occurrence of a species in an isolated spot naturally leads one to consider the 'means of dispersal possessed by shells.' What shell-collector has not failed to be surprised at finding the ubiquitous *Limnaea peregra* in a newly-made pond, and wondered how it got there?

Shell collectors interested in the dispersal of the Mollusca should read a work on the subject written for the International Scientific Series by Mr. Wallis Kew, it abounds in useful information.—E. W. SWANTON, Bratton St. Maur.

BOTANY.

Anemone pulsatilla on high chalky pastures. *Ranunculus auricomus*, *Thlaspi perfoliation*, *Alliaria officinalis*, *Viola hirta*, *V. palustris*, *V. canina*, *Prunus communis*, *Pyris communis*, *Chrysosplenium oppositifolium*, *C. alternifolium*, *Anthriscus sylvestris*, *Petasites vulgaris*, *Myosotis collina*, *M. versicolor*, *Lathrea squamaria*, *Veronica arvensis*, *Nepeta glechoma*, *Primula elatior*, *P. veris*, *Cyclamen hederaefolium*, *Buxus sempervirens*, *Ruscus aculeatus*, *Tulipa sylvestris*, and *Fritillaria meleagris*, all flower in April.—A. H. WATERS.

EDITORIAL NOTES.

IT is with a feeling of regret that the Editor has to announce that after this month the conduction of the N.J. will pass into other hands than his. He had hoped to continue to occupy the editorial chair for many years to come but various causes have combined to produce the present undesired effect, however, the change will be but slight, since the magazine will in future be conducted by two of the present assistant editors—Messrs. A. Ford and A.

H. Waters—while the retiring Editor will continue to take an active interest in its welfare. He may therefore take this opportunity of thanking each and every one of the many readers of the *Naturalists' Journal* who has contributed towards its success, and at the same time he trusts that they will continue to extend to it increased support in the future. Several improvements and even enlargements are contemplated while the price will always remain the same. All communications should *from this date* be addressed to the *Naturalists' Journal* Office, 21, Prospect Row, Cambridge. Mr. Swann's address in future will be 12, Forest Grove, Colville Street, Nottingham.

WE are very pleased to welcome the re-appearance of *Science Gossip*. The new series commenced last month under the editorship of Messrs. John F. Carrington and Edward Step—names probably well known to many of our readers, all of whom will no doubt join us in wishing an old favourite the success which it formerly gained. So far as we can judge its Editors are determined to keep it up to the old standard of excellence.

THE *British Naturalist*, also, has been revived and is now edited by Messrs. Joseph Smith, M.R.I.A., and Linnaeus Greening, its new location being Warrington.

"THE Mentone Cave Men" (ante, p. 125).—Mr. G. H. Bryan writes: "Since this paper was in type, the red caves of Mentone have again produced remains of great interest in the shape of two more prehistoric skeletons—whether palaeolithic or neolithic is uncertain. As in the former cases, the question will probably arise as to the proprietorship of the remains. In the present instance Messrs. Arthur Evans and Drury Fortnum were present at the excavations, and the quarryman, who is fully alive to the fact of his having a valuable find, is taking great care as to the preservation of the remains. The skeleton of the man is as large as in former cases, measuring some six feet two inches."

How to observe sun-spots.—A correspondent remarks: "As there have been some remarkably fine spots on the sun lately, one being so large as to be visible to the naked eye in foggy weather, it may interest many readers to know that sun-spots can readily be seen, almost at any time that the sun is shining brightly, by projecting an image of the sun's disc on a sheet of white paper with the aid of any ordinary telescope or field glass—a powerful telescope is quite unnecessary. All that is required is to point the telescope towards the sun and to place the sheet of paper about a foot or eighteen inches in front of the glass (the exact distance does not matter), then by careful focusing the sun's image will be thrown on the paper and any spots of average size will be well shown without that risk of injuring the eyesight which occurs when the sun is viewed directly; even the *faculae* or bright flecks of flame on the sun are readily observed in this way. This simple plan will enable anyone to observe the present spots, even should atmospheric conditions preclude their being seen with the naked eye."

RURAL NOTES AND OBSERVATIONS.

STRAVITHIE, FIFESHIRE.

Since writing last to your valuable journal, we have experienced quite a change of weather. High winds and rains seem to be the order daily; thus somewhat delaying farm operations. However, in this locality, lea is nearly all ploughed, also turnip land, and if dry weather continues beans will be sown next week. The lambing season has now begun, thus keeping flock-masters busily engaged. I lost a fine young ewe the other day through a colt—for sheer mischief—catching it by the neck and shaking it like a dog, thus

causing abortion. On account of the stormy weather we have experienced, I may state that the rainfall for February, in this district, was about six and three quarter inches.

Our feathered friends have been quite dull, and have given up all thoughts of nesting for the present, except the rooks, they having been busy since the beginning of the month. Partridges and missel thrushes, etc., are now to be seen in pairs. The heron has apparently left our streams for its breeding haunts. A curious incident regarding the latter bird happened a few years ago on the banks of the Renby—a good fishing stream, which flows past here and terminates in the sea at Boarhills. A heron and eel were found lying dead on the bank, the eel being wound round the neck of the bird. The heron had apparently endeavoured to swallow the eel, and the latter determined "not to go down," winding its body round the neck of its adversary, when death put an end to the struggles of both.

I notice greenfinches and chaffinches still congregating in flocks, and frequenting the cornyards where grain abounds. I am inclined to suppose that the female chaffinches, with few exceptions, migrate south, for during the winter, I have seen several flocks composed of nearly all males, and during the last few weeks I have observed several smaller flocks consisting of about seventy per cent females; thus I infer, that the females have just arrived, and the two sexes are about to look for partners for the season, although I have noticed several pairs here that seem to remain mated all the year through.—WILLIAM BERWICK, March 10th, 1894.

ROYSTON, CAMBS.

In my last notes I mentioned the undue number of cock sparrows to the hens, I am now able to state that in this locality there are twenty-five per cent. more of the former than the latter. What becomes of the surplus? Perhaps some of the readers of these notes may be able to tell me that in other localities there is a preponderance of hens?

February 27. One or two pair of rooks began building.

March 8. I found a beautiful specimen of the Angle-shades moth, *Phlogophora meticulosa*, this morning. I have never met with one before and it must be quite out of season.

March 11. Rooks building, but slowly, which I think indicates that we are to have some more stormy weather before spring really sets in.

March 12. A little owl, *Anthene noctua*, was brought in this morning, I have never known this bird to breed here, but being so near the time of nesting and in a locality with plenty of nesting places, it is not improbable that if it had not met with an untimely death it would have done so.

In one of my notes last year I made mention of a common fowl which habitually laid double eggs: it has now been again doing so. I should like to know the cause of this phenomenon?

I am greatly indebted to Mr. Swanton for his remarks on the tape worm and tree sparrow, and I hope during the coming season to learn something definite about the latter.

March 14. Up to the present time I have not either seen or heard of a nest of the blackbird or thrush.—RAMBLER, March 14th.

RECORDS AND OBSERVATIONS.

MAMMALS.

Otter in Cambridgeshire.—An otter was captured at Haslingfield, on February 20th.—A. H. WATERS.

Tape-worm in the wild rabbit.—With reference to Mr. Swanton's remarks in the *N. J.* for March, I may state that I experienced the same thing last year. I shot a good number of wild rabbits—from about two months old to full-grown—and I am sure that in fifteen out of twenty, there were one or more tapeworms. I have no doubt the dry season was the chief cause of the abundance of the parasite, for if the weather had been wet, the eggs would more than likely have been washed from off the grass.—W. BERWICK, Stravithie, N.B.

A freak of nature.—Mr. W. Howlett, naturalist, of Newmarket, writes to the *Bury Free Press*;—“One of the most remarkable freaks of nature that has ever come under my notice has just been sent to me—a full-grown calf, with six perfectly shaped legs, two heads, and two tails. It is not an ugly, disgusting looking object; quite the reverse. It is a very prettily marked and well shaped animal, and quite as large as any calf would be a fortnight old.”—W. G. C.

BIRDS.

Hybrid between house and tree sparrows.—A hybrid between the common sparrow and the tree sparrow was exhibited for the Rev. J. G. Tuck at a recent meeting of the Linnaean Society, and the fact may be interesting to “Rambler.”—A. H. WATERS.

The same bird is recorded in “Science Gossip” for March as having been exhibited at a meeting of the Norfolk and Norwich Naturalists Society on January 30th last; it was shown by Mr. Southwell on behalf of the Rev. Julian Tuck.—Ed.

The rook.—During this winter I have had four rooks brought to me, to be preserved, with the base of bill covered with bristles and feathers similar to the Carrion Crow. I have never had one before and should be glad to know if any of your readers have noticed it.—G. BRISTOW, St Leonards.

Early nesting of robin.—In the “Weekly Record” (a local paper) dating March 1st, I read that a robin’s nest containing three eggs could be seen in a cow-shed on Lower Berry Court Farm, Donhead St. Mary, Wilts.—E. W. SWANTON, Bratton St. Maur.

INSECTS.

P. rapæ in January (See *N. J.*, p. 136).—Is Mr. Clarke sure this was a hibernated individual and not an early emergence? I never knew *P. rapæ* to hibernate as an imago and it would be most interesting if an undoubtedly instance of its doing so could be adduced.—A. H. WATERS.

Early records.—The following moths have already appeared at Wimbledon—*Phigalia pedaria*, *Hybernia progemmaria*, *H. leucophæria*, *Pterophorus monodactylus*, *Anisopteryx æscularia*, and *Selenia illunaria*.—W.C., Feb. 24.

X. xerampelina (centre-barred swallow) at Beverley in 1893.—Several specimens of this exceedingly local moth were taken at sugar last September by Mr. Chapman, of that town, within sound of the Minster bells.—WILLIAM HEWETT, Howard street, York.

Gonepteryx rhamni.—It may perhaps interest some readers to know that I found a female specimen of the brimstone butterfly on November 27th, 1893.—H. GOODE, Northampton.

Coleoptera in the Hastings district.—During the winter 1893-4, I “bottled” the following species of Coleoptera, among many others unworthy of mention. Among the fallen needles, etc., at the foot of Scotch firs: *Metabletus obscuroguttatus* and *Scymnus haemorrhoidalis* occurred rather commonly. *Trachyphloeus scaber*, *scabriculus*, and *myrmecophilus* were taken somewhat plentifully at the roots of grass on the sea-cliff. *Bledius atricapillus*, together with the cannibal *Dyschirius thoracicus*, and *Trogophlaeus halophilus* occurred in the rock of the cliffs. In fir-stumps I found the handsome *Rhagium bifasciatum*, reposing with elegant ease in his woody bed; and at the roots of an oak-tree I took one specimen of *Lithocaris brunnea*. Of course tufts of grass and

moss yielded beetles by the thousand. By cutting tufts I obtained *Tropiphorus carinatus*, *Bembidium mannerheimii*, *Anchomenus oblongus*, *Bradyceillus distinctus* and *harpalinus*, *Stenus juno*, *Lathrobium longulum*, *Philonthus intermedius*, *Mylaena kraatzi*, *Lamprosoma concolor*, *Scymnus mulsanti*, and *Chilocorus renipustulatus*. Perhaps my best captures were those taken in moss, which included *Cœnopsis fissirostris*, *Cœnopsis Waltoni*, *Cassida nobilis*, *Cassida obsoleta*, *Orobites cyaneus*, and *Carcinops minima*. I may add, my field of work was within a two-mile radius of Hastings and St. Leonards; had I extended my collecting ground farther abroad, I might have had a much nobler list to present.—G. D. TURNER. Hastings, 9th March, 1894.

Notes on Autumn lepidoptera.—Fine as the weather was at the beginning of last autumn it failed to bring out a profusion of butterflies, on the contrary they were scarcer here than for many preceding seasons. Many butterflies that are usually plentiful in the autumn were scarce or did not appear at all. I did not observe a single specimen of *G. rhamni*, although I captured hibernated specimens early in the year; this insect as far as my experience goes is never common here probably owing to the scarcity of its foodplant. I never heard of either of the "clouded yellows" being seen in Suffolk last season. Both *V. urticæ* and *V. polychloros* were rather scarce, the latter more so; *V. io* which is usually so abundant was quite rare, I only observed two or three specimens during the whole year; *V. atalanta* was plentiful, but in a less degree and I never saw a specimen of *V. cardui*. *C. pamphilus*, *P. phœas*, and *L. alexis*, were abundant. During the past season I have sugared in various localities but the only place I met with tolerable success was in Bentley Woods. I first sugared there on September 15th, and notwithstanding a heavy rain the moths came freely to the sugar. On that night captured the following.—*Cymatophora diluta*, *Agrotis puta*, *A. suffusa*, *A. segetum*, *Noctua C-nigrum*, *N. xanthographa*, *Anchocelis rufina*, *A. pistacina*, *A. litura*, *Cerastis vacinii*, *Scopelosoma satellitia*, *Xanthia silago*, *X. cerago*, *X. ferruginea*, (abundant), and *Hadena protea*. I sugared the same trees again, on October 7th.; the evening turned out very warm and close and the moths literally swarmed. I took the following:—*Agrotis segetum*, *A. suffusa*, *Noctua C-nigrum*, *N. dahlii*, *Orthosia macilenta* (abundant), *Anchocelis rufina* (common), *A. pistacina*, *A. litura* (abundant), *Cerastis vacinii* (abundant), *Scopelosoma satellitia* (common), *Xanthia silago*, *X. cerago*, *X. ferruginea*, *Miselia oxyacanthe* (common), *Agriopsis aprilina* (common), *Phlogophora meticulosa*; This was the best evening I had in the year. At light during the Autumn I have taken *Pæciolocampa populi*, *Nonagria lutosa*, *Agrotis puta* (common), *Gortyna flavago*, *Heliothis popularis*, *Luperina testacea* (common), *Noctua C-nigrum* (abundant), *Xanthia gilvago*, *X. silago*. The "thorns" were represented by *Ennomos tiliaria*, *E. fuscantaria*, *E. angularia*, and *Himera pennaria*. The other geometræ I took included:—*Cidaria miata*, *Chesias spartiata*, *Hybernia aurantiaria* etc. I spent several evenings at ivy hoping in vain to come across that rarity *Cerastis erythrocephala*; Altogether I took about a dozen species of *Noctuæ* at ivy blossom including *Xanthia gilvago*; I took also several specimens of *Cidaria miata*. I might mention that I took *Cymatophora ocularis* and *Dipthera orion*, at rest, about the beginning of June.—E. BAYLIS, Burrel Rd., Ipswich.

London Entomology in 1893.—At Kentish-town in a garden, I caught the following in 1893. June 13th, spinach moth; 15th, poplar hawk; 16th, female wood leopard, large yellow under-wing, mottled rustic; 17th, swallow-tail moth, buff ermine, male wood-leopard; July 7th, cabbage moth; 8th, feathered gothic. At the end of May and during the whole of June, there were clouds of magpie moths, and in September, several red admirals were seen, one of which I caught. In August, I took several gamma moths. In Lincoln's Inn Fields, the larvæ of the vapourer moth was abundant, but I did not see a perfect single insect. Also here, I took the large yellow underwing,

gamma, and white ermine moths. On tree-trunks here, I found the willow beauty not uncommon. In a warehouse in Drury Lane, on June 27th, I caught a large yellow underwing, and on the 30th, a buff ermine moth. On August 28th, I had a small tortoiseshell butterfly given me, which had been caught the day before on a shop window in Holborn. At Clapham Common, I have taken the common blue, red admiral, and small tortoiseshell butterflies several times. I have never seen Folkestone given as a locality for the grayling, but I found it there in great profusion last August.—A. H. JAMES, March 9th, 1894.

FIELD CLUBS AND SOCIETIES.

LAMBETH FIELD CLUB.—February 19th: The long promised paper on "Tin and Lead," was read by Mr. W. B. Baskerville on this occasion; the paper was well illustrated with specimens of ores, arsenicates of lead, etc. Some mixed minerals were exhibited on behalf of a non-member, and discussions were raised on the movements of the planet Venus, the coming sale of a great auk's egg, at Stevens's auction rooms, Covent Garden, and other matters. March 5, This meeting was the occasion of a extremely interesting lecture by an astronomical member, Mr. H. Wilson, on "The Sun," which was illustrated with a number of lantern views, photographs, and diagrams. After showing how all energy and motion on earth was directly or indirectly connected with the sun, the lecturer showed some diagrams illustrating the distances of the planets from the central luminary, the furthest, Neptune, being over thirty times as far from it as the earth was. Although the sun was so large some of the fixed stars were known to exceed it in size and brilliancy, while others were of inferior dimensions. The nearest star, Alpha Centauri, was twice as big as our sun, and the "dogstar," Sirius, was at least forty-two times as bright. Returning to our sun, the lecturer next showed some diagrammatic representations of its interior. The outer layer, or photosphere, of the sun was the portion that gave out the light, so that its radiance was only on the surface. Examined telescopically, this was found to have the appearance of rice grains, while towards the edge of the disc brighter spots known as faculae were to be observed. The tremendous brilliancy of the sun was due to the incandescence of particles of carbon, so that it was a sort of huge gas-lamp. The sun spots that were so much talked of were depressions in the photosphere, with a dark centre (umbra) and a lighter surrounding region (penumbra), and were sometimes 40,000 or 50,000 miles across, and generally of very irregular form. As the sun rotated on its axis, the spots travelled across, and by this it was found that a complete axial revolution took place in about twenty five days, but that the equatorial regions moved rather more rapidly than the rest of the sun's body. The spots were seldom seen on the equator, but were mostly confined to two zones, one above and the other below it. A large spot, measuring 48,000 miles by 46,000 miles, had but a few weeks ago passed over the solar disc, and some sketches of the spot as seen by the lecturer were thrown on the screen, besides other views of notable spots by different observers. The number of spots seen, constantly varied, a maximum period occurring on an average every eleven years. The present year was a very favourable one for sun-spot observation. Whether there was any connection between sun-spot maxima and the weather, the harvest, or commercial depression had yet to be discovered, but there was no doubt that these recurring periods were always accompanied by terrestrial magnetic disturbances, and displays of the aurora borealis. Perhaps the most interesting portion of the lecture was the final one, which was devoted to the description and illustration of the solar prominences and corona. The former were of two kinds, "quiescent" and "eruptive," and consisted of great flames of hydrogen gas, often resembling in form terrestrial clouds; but

in the case of the eruptive prominences metallic vapours were intermixed and the flames were shot out to 200,000 or 300,000 miles from the sun's surface, with a velocity of from 200 to 500 miles per second when first ejected. The corona was a luminous appearance surrounding the sun, but only to be seen during eclipses, the sun's light at other times rendering it invisible. It was made up partly of gas and partly of solid particles, but its matter was of such extreme tenuity that even that most delicately constituted body, a comet, would pass through it without being influenced in any way. Mr. C. H. Holden will deliver a lecture entitled "A Ramble in the Woods," on April 2nd; the lecture will deal with British trees and will be illustrated with wood sections etc.

HASTINGS AND ST. LEONARD'S NATURAL HISTORY SOCIETY.—A very successful meeting of the Hastings and St. Leonards Natural History Society was held on Thursday evening February 22nd, in the Museum Room of the Brassey Institute. Mr. H. F. Cheshire presided over a large attendance, which included :—Dr. Gray, J. P., the Rev. E. N. Blomfield, Messrs. Mc. Cormick, Field, Bennett, Lyon, Clarke, Esam, Butterfield, Compton, Stevens, E. Connold, Hall, Lindsay, Ford, Gildersleeve, Brooke, Mann, and Connold (hon. sec.), and fourteen lady members. Letters of apology for non-attendance were received from the President, Messrs. Turner, Rufford, and Jeffery. The Chairman explained that the object of the meeting was the reading of short papers and agreeable conversation. The Rev. E. N. Blomfield, in making a few remarks, said he took a great interest in all natural history, and especially the natural history of this neighbourhood. He mentioned his connection with the old Philosophical Society thirty six years ago, coupling the name of Mr. A. E. Butler with his own as amongst the first to commence the formation of a local list of the flora and fauna. He then dealt with the "Hemiptera," a kind of tree bug, describing the peculiar characteristics of the insect, one of which was the wonderful care it manifested towards its eggs, upon which it sat like a hen. He said he had a very good collection of insects at his home at Guestling, and if any of the members chose to come over there he should be very pleased to show them. Mr. E. Clarke gave a short description of a bicycle ride he made to Udimore for the purpose of inspecting a herony in a wood there, and he gave some interesting particulars of ornithological specimens he saw there. Mr. Butterfield then spoke with reference to the serrated claw of the nightjar, stating that it was mostly considered to be for the purpose of cleaning the hairs which accumulate from feeding on various moths, but it was a disputed point. The Chairman, Mr. Bradshaw, Mr. Clarke, and Mr. Field also offered some remarks on the same subject. Mr. Connold (the hon. sec.) made a short statement with reference to the position of the Society. The membership roll had reached one hundred and one, and of that number seventeen were lady members. That night they had admitted fifteen new members. He then proceeded to read a short paper on "The common duck barnacle" (*lepas anatifera*). He said in the earliest stages of their life they were free agents, moving and swimming about where they pleased. After having changed their appearance—that was to say, having cast their skin several times—they became in the course of time fixed, and assumed the form of a barnacle. Their growth was very rapid indeed, and often a vessel going to and returning from tropical stations became so thickly covered below the water line that its progress was considerably impeded. Some of the creatures were upwards of sixteen inches long. At the extremity were the shell plates, which enclosed the entire animal with its wonderful feet. There were twenty-four of these feet, clothed with a total of over 8,000 hairs. He also gave some further particulars with reference to these creatures, all of which were very interesting. The chairman exhibited a live guinea-pig, and gave a very entertaining account of its habits. The meeting closed with the usual vote of thanks to the chairman.

N.B. Several reports of Societies are held over until next month, through want of space.

15 AUG. 94



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OFFERED.—94 maps (in 1 vol.) issued in connection with Alison's Europe, by A. K. Johnston, F.R.G.S. *Outing*, April 1891 to Oct. 1893, in 4 vols. bound, 1 unbound; vol. XIII the *E.M.M.* and vol. X *The Entomologist*, bound together; vol. XI *The Entomologist*; 2 vols. *Intellectual Observer*; vols. IV & V *Review of Reviews*. Wanted: British Coleoptera, Aculeate Hymenoptera, Henniptera.—T. M. McGregor, The Mills, Horse Cross, Perth, N.B.

FOR Exchange.—60 parts Cassell's Familiar Wild Flowers, 12 parts Scientific Recreations, Naturalist's Gazette (complete), Biography of a Plant by Schleiden.—Joe Firth, Mill Bank, Triangle, near Halifax.

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LEPIDOPTERA.—Duplicates; C. gasius, S. hermione, C. promethea, S. cecropia T. polyphemus, C. caesonia, C. philodice, S. alope, and a few exotic species of Coleoptera. Desiderata: any other species of foreign Lepidoptera and Coleoptera.. C. T. Jones, 4, North Bailey, Durham.

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WANTED.—Large folding store case, corked, for insects, in exchange for wall case in black and gold, Oxford frame, containing field-fare, (winter scene).—A. Hughes, 21, Cornwall road, Brixton S. W.

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BOOKS.—Twelve parts Baily's Sporting Magazine; Comic Cricket; Browns taxidermy; British butterflies; exchange lot (value 6/6).—Davis, 33 Brighton Terrace, Brixton.

BOOKS.—Boy's Own Paper, Vol 10, 11; Amateur Work, Vol 4; Cassell's Fisheries of the World, exchange lot (value 15/-) for eggs, books etc.—Davis, 33, Brighton Terrace, Brixton, London.

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**ON SOME VARIETIES OF BRITISH
LEPIDOPTERA.**

By ALBERT H. WATERS, B.A.

No. 1. *LIPARIS MONACHA*, var. *EREMITA*.



Fig 1. *L. monacha*, var. *eremita*. Drawn by A. H. Waters.

THE dark arches moth is by no means constant to any decided pattern of marking, and varies so much in this respect, that it is not easy to draw a figure representative of what is, or should be, the type form. One has only to compare the figures in the various natural histories of British moths, as, for instance, Newman's and Stainton's, to see this. Such being the case, we might expect to meet with many varieties of this moth. We have received from Mr. E. Edmonds, the well-known Windsor breeder of lepidoptera, a specimen of the beautiful melanic form, *eremita*, figured above and which he bred from parents captured in the New Forest. He obtains them by a process of selection ; pairing off the dark males with dark females.

It must be noted that these dark specimens are purely British, although doubts have been expressed as to whether the black *monacha* occurs here. Mr. Edmonds informs us that he captured

a wild male, nearly as black as the one figured above, in his district, and has seen others as black captured in London in a wild state.

The description of the specimen before us, is as follows :

Liparis monacha var. **Eremita**.

♂ expanse of wings, 1' 9". Forewings blackish brown, with the characteristic markings of the more usual forms deep black, costal margin half way from the base deep black, hind margin spotted with black, veins of wing deep black. Hind wings, mouse colour with dark brown spots on margin. Thorax blackish brown with deep black collar, abdomen black, antennæ brown.

THE VALUE OF RARE BRITISH BUTTERFLIES.

By A. FORD.

It may be of interest to a few of the readers of this magazine to know the prices which some of our rare butterflies have fetched "under the hammer." The statements in this article have all appeared in the various Entomological and Natural History Magazines of the last three or four years, but they will probably prove interesting to those who have not yet read them.

The "rage" at the present time, among most lepidopterists, is for "varieties" and it is astonishing the prices, really good ones have fetched. At the sale of the late Mr. Howard, Vaughan's fine collection, an hermaphrodite specimen of the "clouded yellow" (*Colias edusa*) fetched ten guineas, while two other specimens of this insect, in one of which the fore-wings were of the var. *helice* and the hind-wings of the normal form, the other with the right side *helice* and the other side ordinary; fetched £10 each. At the same sale a pair of the rare "Bath white" (*Pieris daplidice*) realised £2/15/- the pair; another pair sold, a few weeks ago for £2/12/6. At another sale quite recently "Camberwell beauties" (*Vanessa antiopa*), averaged about a pound apiece. The "Queen of Spain Fritillary" (*Argynnис lathonia*), fetched from 10/- to 15/- each, while a pair of a fine variety of the common "pearl bordered fritillary" (*Argynnис Euphrosyne*), realised £5, and a black var. of *Melitaea Athalia* was knocked down at £2/15/-. A couple of nearly black specimens of the "white admiral" (*Limenitis sybilla*) went at £1/15/- each, and a fine banded variety of the very common "wall brown" (*Satyrus megæra*), went for the trifle of £3. The value of the extinct "large copper" (*Chrysophanus dispar*), seems steadily on the increase; a few years ago, a fair specimen could be purchased for a sovereign; at a recent sale, a series of eighteen of this handsome species realised £80, ! an average of

£4/- each ; the lowest price, which was for a "poor" specimen was £2/10/-, and the highest £6/10/- ; if this continues, in a few years £10 will scarcely purchase a type ; yet, less than half a century ago this species could be purchased at 1/- each ! The very rare "mazarine blue" (*Polyommatus acis*), now extinct or very nearly so, fetched about 10/- each. All the above were sold by Mr. Stevens, at his auction rooms, King Street, Covent Garden, w.c., and are a few instances of the current market value of "rarities" and "varieties" among British lepidopterists. Before closing this article, I will give an instance of an entomological note which I noticed some time ago in a popular "penny weekly," which stated that recently in New York, a specimen of an extinct butterfly was sold for 1,500 dollars (£312/10/-) !

In a future number of this magazine, I hope to be able to give a few instances of the prices, some of our rare moths have realised "under the hammer."

COLEOPTERA AT CAMBER.

On one of the sunniest mornings in March last a collector friend and myself started off for the famous beetling ground of Camber. I will mention at once that we did not touch the sand hills, but kept entirely to the marshes. By the way, that ever increasing body, the golfers, with their concomitant evil, the parasitic "caddy," have swooped down in full force upon the delightful old hills, and I fear the same must happen as in the case of the Deal sand hills and other localities, where rare and local Coleoptera were made still rarer or wholly exterminated by the invasions of the golfing fraternity. After leaving the train which brought us from Hastings, we had a pleasant two mile walk across the far extending marshes. The first halt was then made at a ditch, the water net was fitted up and thrust into the water. Having hauled it out we found among its slimy contents the first captures of the day, viz., *Laccobius bipunctatus*, *Philhydrus testaceus*, *Hyphydrus ovatus*, *Haliphus cinereus*, *Helophorus aquaticus*, *Noterus sparsus*, *Hydrobius fuscipes*, etc. At this ditch we also took six species of *Hydroporus* ; *H. angustatus*, *H. inaequalis*, *H. palustris*, *H. lineatus*, *H. melanocephalus*, and one uncertain. We next went to work on old fences, much to the dismay of the irate landowner, with whom we had to make our peace later on. But notwithstanding this somewhat unpleasant incident, we were perfectly happy, for it was in these fences that we discovered the much looked for *Ptinus germanus* in by no means small numbers. This insect was by far the best capture made during the day. By the same method of collecting we took *Corcidula setellata*, *Phalacrus corruseus*, *Mecinus pyraster*, *Dromius 4-notatus*, and

Anobium domesticum. Abandoning fences we proceeded on our way rejoicing. Passing a dead bird, we picked it up and beat it over paper, but one specimen of *Agriotes sputator* was all we got for our trouble. We then made straight across the marshes to a pond, where by searching in the refuse, both dry and wet, upon its banks; the following species were dropped into our bottles: *Cyclonotum orbiculare*, *Philhydrus testaceus*, *Philhydrus ovalis*, *Haliplus ruficollis*, *Noterus sparsus* (all in wet refuse); *Anchomenus Thoreyi*, *Anchomenus marginatus*, *Trechus minutus*, *Bembidium incolor*, *Coccidula scutellata*, *Coccidula rufa*, *Coccinella 19-punctata*, *Octhebius bicolon*, *Atomaria mesomelas*, *Anacæna variabilis*, *Alcochara nitida*, *Homalota incana*, *Quedius attenuatus*, *Stilicus affinis*, *Xantholinus ochraceus*, *Myrmedonia canaliculata*, *Stenus Juno*, *S. pubescens*, *S. canaliculatus*, *S. similis* (in dry refuse), and many others. The water-net now came into use again, and by its aid we fished our of the pond *Colymbetes pulverosus*, *Agabus bipustulatus*, *Laccobius bipunctatus*, *Laccobius minutus*, *Haliplus ruficollis*, *Philhydrus testaceus*, *Laccophilus hyalinus*, *Noterus sparsus*, *Hydrobius fuscipes*, *Hydroporus parallelogrammus*, *H. lineatus*, *H. palustris*, *H. inæqualis*, etc. Moss and tufts of grass growing round the same pond were fairly productive, and by examining these we added to our already well-filled phials *Stenolophus exiguus* var. *hiridus*, *Badister bipustulatus*, *Blechrus maurus*, *Pterostichus vernalis*, *Anchomenus Thoreyi*, *Anchomenus parumpunctatus*, *Agriotes lineatus*, *Alcochara nitida*, *Myrmedonia canaliculata*, *Philonthus micans*, *P. trossulus*, *Scymnus frontalis*, and others. This ended our very successful day on the marshes, and as we trudged off back to the railway station the picturesque old castle of Camber, standing, as it does, alone in the midst of the marsh, faded away in the distance and gloom; and the red lights ahead which marked our goal became clearer and still clearer at every step we took.—G. D. TURNER, "The Grampians," St. Helens Road, Hastings.

HINTS FOR THE MONTH.

ORNITHOLOGY.

May is a busy month for the oologist. The following is a list of some of the birds which nest now. For a complete list we refer our readers to H. T. "Booth's British Birds: their Nests and Eggs," advertised on our covers.

In bushes. Blackcap, goldfinch, jay, sedge warbler, willow do., whitethroat, Dartford warbler, and long-tailed tit (occasionally).

Holes in trees. Jackdaw, barn owl, redstart, blue, great, cole and marsh tits, and pied wagtail.

On the ground. Corn bunting, chiff chaff (among furze), cur-

lew, dunlin, black-backed gull, nightingale, oyster catcher, meadow pipit, rock pipit, golden plover, ring plover, stone chat (in furze,) willow warbler (sometimes in sloping banks, and sand-piper (banks of rivers).

In Trees. Turtledove, hawfinch, sparrow hawk, and chaffinch.
Fir Trees. Gold crested wren.

In Reed Beds. Coot, great, crested, and little grebes. In sedges. Reed bunting. On Sea Cliffs. Guillemot, kittiwake gull, puffin, and rock pipit (sometimes).—A. H. WATERS.

COLEOPTERA.

This is the best month of the year, not only for the Coleopterist, but for the student of any order of insects.

Hawthorn blossom is very attractive to beetles, an umbrella will be found necessary for this, as mentioned last month. The sweep net will be found very useful this month, and the water net will also be required to secure the handsome *Donacias*, some of these are common everywhere, on waterplants, a bright sunny day is the best for them, as they hide themselves in cloudy weather. Carrion will sometimes yield large numbers of beetles and sometimes "rarities," it is surprising the number of beetles which may sometimes be shaken out of a small bird or animal, I have beaten out 200 or 300 specimens from a gull picked up on the seashore; the collector must not mind the "game" being a trifle "high." Heaps of cut grass and other refuse when left for some time will often swarm with beetles. Sandpits are generally well worth working, as numbers of beetles fall in or get blown in and fail to get out again. Palings, especially new oak palings, will, especially on sunny days, sometimes produce good species, and the collector should continue to keep a sharp eye on pathways, etc., and he will be sure to come across many scarce beetles.—A. FORD.

LEPIDOPTERA.

The Lepidopterist is fully engaged in May, with pinning out such of his bred moths as he destines for specimens. There are such facilities nowadays for the purchase of rare or uncommon pupæ, that a large number of collectors fill their cabinets by this means.

Entomologists of the old fashioned type, who value most the specimens they capture with their own hands, and find by that diligent seeking and knowledge of habits, which makes our science an inestimable strengthener of the wits, should look out for *Pieris daplidice*, *Leucophasia sinapis*, and the May fritillaries.

Examine tree trunks and palings early in the morning for moths. *Odontopera bidentata* will be found on the former and *Hemerophila abruptaria*, looking very much like a chip of wood, on the latter.

Subject to meteorological conditions, the following larvæ may be searched for or beaten out of trees. On oak, *P. pilosaria*, *P. bajularia*, *H. leucophearia*, *O. dilutata*, *H. cristulalis*, *N. strigula*, and the following tortrices, *T. xylosteana*, *T. viridana*, *C. fulvana*, *P. corticana* and *P. lecheana*. On birch, *G. papilionaria*. On hawthorn, *A. æscularia*, *N. cuculatella*. On lime, *C. psitticata*. On yarrow, *N. zonaria*. On bedstraw, *S. multistrigaria*. On chervil, *T. chœrophyllata*. On nettle, *P. verticalis*.—A. H. WATERS.

BOTANY.

Epimedium alpinum in mountainous woods in parts of Scotland and the north of England, *Cochlearia officinalis* and *C. Anglica* on the sea shore, *Draba muralis* on limestone mountains, *Turritis glabra* on banks in Norfolk and Suffolk, *Matthiola incana* on the southern coast of the Isle of Wight, *Genista pilosa* to be sought for in heathy places, *Polycarpon tetraphyllum* on the south coast, *Valeriana dioica*, *Pulmonaria officinalis* in woods, *Mertensia maritima*, *Ophrys muscifera*, *Scilla verna* on the sea coast in the west and north of England and *Luzula pilosa* which is to be found in woods, are among the many flowers of May.—A. H. WATERS.

THE BIRDS OF MANCHESTER.

By J. SANDERS.

Missel thrush and song thrush common, Redwing (*Turdus iliacus*) common in winter, Fieldfare (*T. pilaris*) do. Blackbird, Ring Ouzel (*T. torquatus*), Whinchat (*Pratincola rubetra*), Stonechat (*P. rubicola*), Redstart (*Ruticilla phœnicurus*) Robin, Whitethroat (*Sylvia cinerea*), Lesser do. (*S. curruca*) blackcap garden warbler, chiffchaff, (*P. rufa*) willow wren, (*P. trochilus*), wood wren (*P. sibilatrix*), sedge warbler (*Acrocephalus phragmites*) grasshopper do. (*Locustella naevia*) hedge accentor, dipper (*Cinclus aquaticus*) all common. Long-tailed tit common in winter, great tit, common, cole tit common in winter, marsh tit (*Parus palustris*), blue tit, nuthatch (*Sitta cæsia*), common wren (*Troglodytes parvulus*) common. Common creeper (*Certhia familiaris*), pied wagtail (*Motacilla Yarrellii*) common, white wagtail (*M. alba*) scarce, has not been known to breed in the neighbourhood, grey wagtail (*M. sulphureas*) scarce, yellow wagtail (*M. flava*) common. Tree pipit and meadow pipit common. Golden oriole, once shot near Bury, great grey shrike (*Lanius excubitor*) once taken by bird catchers at Salford, red backed shrike scarce, spotted flycatcher (*Musicapa grisola*) common, pied flycatcher (*M. atricapilla*) scarce, swallow, house martin and sand martin (*Cotile riparia*) common, green finch (*Ligurinus chlorus*) common, Hawfinch (*Coccothraustes vulgaris*)

three shot in 1889 near Bowdon, goldfinch and siskin common in winter, house sparrow and tree sparrow (*Passer montanus*) common, brambling (*Fringilla montifringilla*), linnet and mealy redpole (*Acanthus linaria*) common in winter, lesser redpole (*A. rufescens*) common, bullfinch common in winter, common bunting (*Emberiza miliaria*) yellow bunting (*E. citrinella*) and black headed bunting (*E. schæniclus*) common. Snow bunting (*Plectrophenax nivalis*) occasionally occurs in severe winters.

(*To be continued.*)

OCCURRENCE OF X. AURAGO (THE BARRED SALLOW) IN SOUTH YORKSHIRE, 1893.

Whilst looking over the collections of Messrs. Brooks, and Bloor of Rotherham, a few weeks ago, I noticed several examples of that "belle phalène" *X. Aurago*, including two specimens of the variety *fucata*, 14 "en tout," which had been obtained by them whilst shaking ivy blossom into their umbrellas on the night of the 30th, of September in a wood situate at a short distance from Rotherham. Both gentlemen very kindly furnished me with full particulars as to capture etc, of which the following is a résumé. Time about 7 p.m., wind blowing from South West, and so strong that their umbrellas could only be kept up by dint of great exertion, rain falling *à verse*, and rendering it necessary to frequently empty the umbrellas, of water as well as discarded insects.

A night indeed when all but the most enthusiastic, and determined Entomologists; (and I am glad to find in the course of my peregrinations, that Yorkshire posesses a good number) are at home, or elsewhere, under shelter, preferring some other form of amusement, to that of "mothing" under such unfavourable meteorological conditions, perhaps enjoying the weed," and ever and anon exclaiming,—what an awful night,"—"had it been fine I should have gone" "for such, and such a species," but I am soliloquising however, let me add, that such a night, as the one I have described, is just that, on which something may be expected in addition to a wetting.

I allude to a rarity.

"Revenous à nouns moutons." [? phalénés.—ED.]

Four specimens were secured on this occasion, and ten more on subsequent evenings, up to the 8th. October, with the exception of the first capture, not more than two were taken on one night, others would doubtless have been obtained but that the

Aurago were at first taken for light forms of *A. rufina*. The species had evidently been out some little time when first discovered. Mr. Brooks informs me that as soon as *Aurago* falls into the umbrella, it rapidly ascends the sides, in order to escape. *C. vaccinii*, *A. rufina* and *X. ferruginea* were all common at the ivy blossom.

Mr. G. T. Porritt, in his exceedingly interesting and useful list of Yorkshire lepidoptera; published 1883, says of *Aurago*—“A great rarity,” and gives “Sheffield” 1859 and 1860, and “York,” the latter place on the authority of Stainton’s Manual, but neither date nor captor, are given, as the only localities in which it had previously been taken. Dr. Corbett records its occurrence at Doncaster last season.

The Rotherham record (proving as it does, that the species is well established with us), is therefore of great interest to Yorkshire Entomologists generally, and I should here like to urge upon all of them, to keep a sharp look out for it next Autumn, especially those resident in south Yorkshire, if this be done, I doubt not, but that we shall hear of it during 1894.—WILLIAM HEWETT, Howard Street, York, February 1894.

NOTES ON THE VARIATION AND DISTRIBUTION OF BRITISH SLUGS.

By E. W. SWANTON.

Since the Conchological Society’s publication of a census list in 1885, many additions have been made to the list of British Slugs. In the following pages the words “the Census” will refer to that of the Society.*

Family *Arionidae* Sub family *Arioninæ*

Genus. *Arion*, Féüssac.

Species. *Arion empiricorum*, Fé., 1819.

=*A. ater*, Brit. Nuctt.

Distribution. Ninety one counties according to the Census.

An addition is Co. 15, East Kent, I have taken it at Wychling, near Sittingbourne, with the varieties, *Albus* Fé., and *Ruber*, Moq.: the former variety is rare in the district, being found only in the Gardens of Wychling Rectory. Also at Bratton St. Maur. Somerset, it occurs in common with the var. *niger*, Moq.; and at Southampton, Hants.

Variation. Collinge in his recent Catalogue of British Slugs (British Naturalist, Aug. 1892) enumerates twelve varieties. The actual boragei of Simroth has not, as yet, been found in this

* Lankester’s classification is followed; it being given in Ency. Britt.; the last edition; also in Zoological articles by E. Ray Lankester.

country, but forms very closely allied have (Review of the Arionidæ, W. E. Collinge, p. 6.)

In the recent list of land and freshwater Mollusca, issued by the Conchological Society—the *v. reticulata* Rbk, is a doubtful form, the *v. bicolor*, Rbk= *v. bicolor*, Moq., *brunnea* Rbk, is only a minor form of *ruber*, Moq, and *plumbea*, Rbk, a minor form of *razoumowskii*, kal.

Arion elongatus, Collinge 1893.

A new species. Taken with other Arions at Wainsgrove, Southampton, in July 1893.*

Externally this slug somewhat resembles certain young forms of *A. empiricorum*, Fér, and forms of *A. hortensis* Fér; its structure, however, is very different (W. E. C.) For full description of this interesting species, see "Annals and Magazine of Natural History," January 1894.

Arion lusitanicus, Mabille.

=*A rufus*, Morelet.

Collinge in the Review of the British Arionidæ admits this species as a British slug on the following grounds.—

1. Both Simroth, and Pollonera acknowledge its right to rank as a good species.

2. Forms he has examined agree with the figures and descriptions given by these authors. It is not given in the Conch. Soc. List.

Distribution. It occurs at Bevihenen, Bantry Bay, Ireland; and probably will be found, ere long, in the south of England.

Variation. Professor Cockerell in his recent "Check list of the Slugs" gives six varieties; of which 'simrothi' is described by the author: *fuligineus* Morel., 1845, is doubtful.

Rufescens, Collinge 1893, has the whole of body a dark red, sides of body bandless. *Nigrescens*, Collinge 1893. Body black; this variety includes all black or plumbeous coloured forms.

Olivaceus, Collinge 1893. Various shades of olive green, *Flavo-griseus*, Collinge, 1893. Yellowish grey. Foot fringe usually lighter than the body. It is difficult to separate some forms of *olivaceus* from this variety (W. E. C.)

Arion flagellus, Collinge 1893.

This new species of *Arion*, an intermediate form between *A. lusitanicus*, Mab.; and *A. subfuscus*, Drap,—was figured and fully described, by Mr. Collinge, in the Annals and Magazine of Natural History, October 1893. It was taken by Mr. R. A. Phillips at Schull, Co. Cork. Variation. Mr. Collinge has described a variety *Phillipsi* (associated with the name of the finder) taken at Schull with the type.

Mr. Collinge writes "A. flagellus differs in a number of well-marked anatomical characteristics from any other known species.

* A list of the slugs, (as observed by the author), occurring at Southampton was given in the *Naturalist's Journal* March 1894.

The differences in the generative system are the best marked, and such as to at once indicate its specific identity."

Arion subfuscus, Drap 1801.

Distribution. The Census records it for forty four counties. I have taken it at Wychling, Kent; and at Southampton it is a common species. Variation. Collinge enumerates five varieties of which brunnea, Lehm, is doubtful. At Southampton I took some peculiar forms, and sent some to Mr. Collinge who thought they greatly resembled *A. cottianus*, but Dr. Simroth, who saw a dissection wrote saying "I think it a very developed *A. subfuscus*, richly folded in the distal copulatory portion of the oviduct."

Arion cottianus, Pollonera.

An addition to the British list.

In May 1892 I collected some Arions in a garden at Southampton examples of which I forwarded to Mr. Collinge who pronounced them to be *A. cottianus*, Poll.; and later this determination was confirmed by Dr. Scharff.



Arion flagellus, (after Collinge).

This slug may possibly be a common species in the south of England.

Arion intermedius, Normand.

In his Review of the Arionidæ, Collinge says, "This the smallest of our Arions was first identified as a British Slug by Dr. Scharff in 1890. Like *A. empiricorum* it assumes the peculiar arched position when at rest. Although priority rests with Normand as far as the actual name is concerned, Simroth was the first to re-establish its claim to rank as a species on anatomical grounds in 1885, and adds in a footnote "It is very questionable whether descriptions of new species omitting an account of the anatomy can be termed adequate, and malacologists are rightly refusing to recognise inadequate descriptions, or descriptions, of shells apart from the animal. In the Conch. Soc. List 1892, it is given as *A. minimus* Simroth.

Distribution. Yorkshire, Oxfordshire, Derbyshire, etc. Also Co. Kerry, Ireland, and Connemara Co. (?), Ireland.

Arion hortensis Fér, 1819.

Distribution. The Conch. Soc. list records it for seventy five counties. It is common at Doddington, Kent. also two varieties *rufescens*, Moq, and *niger*, Moq.

At Southampton it occurs with two varieties *griseus* Moq., and *cœruleus*, Cllge; and is widely distributed in Somersetshire. Being very perplexing, owing to the young differing so markedly from the adult form, Collinge has given a synopsis in his review of the Arionidæ, showing its anatomical differences in comparison with *A. bourguignati*; and enumerates six varieties. Var. *albipes*, Ckll, is probably only an immature example of the type," and var. *fallax* Ckll, is a minor subfuscus. Why is the var.: *cœruleus*, Cllge, omitted in the recent list published by the Conchological Society? It might even prove to be a distinct species.

Arion *Celticus*, Pollonera.

Another addition to the British List. I found it at Southampton conjointly with the find of *Arion cottianus*, and in the same locality, and thought, at that time, the two species may have been recently introduced, being brought in earth, or among plants, but, as I afterwards found *A. celticus* at Doddington, Kent, both species may possibly be found in many other localities in the southern counties.

It is doubtful if the anatomical differences of Pollonera's *A. celticus* are constant enough to warrant it with specific distinction. That author figured and described it in 1887, but Dr. Simroth has examined specimens, and thinks there is no difference between it and *A. hortensis*.

(*To be continued.*)

FIELD CLUBS AND SOCIETIES.

LAMBETH FIELD CLUB.—March 19.—At this meeting, Mr. F. P. Perks read a paper on "Naturalists and Nature Lovers," the conclusion arrived at being that the blending of these two (often antagonistic) types in one individual produced the greatest amount of enjoyment in the study of nature. This was followed by a paper on "Limestones," by Mr. W. B. Baskerville, in illustration of which several specimens were passed round for inspection. Mr. Baskerville also exhibited some acorns of *Quercus ægilops*, from the Levant. The president, Mr. George Masters, then read some notes on Surrey archaeology. He called particular attention to the Roman occupation of Surrey. April 2.—A well illustrated lecture was given on this date, by Mr. C. H. Holden, entitled "A Ramble in the Woods; or, Timber and Timber Trees." Mr. Holden is a great authority on trees, so his lecture was much appreciated by those present, including several visitors. He first pointed out the importance of the study of forestry to the human race, though from one circumstance, namely, the substitution of iron for wood in ship-building, its importance was not now so great. When oak was in vogue for ship-building, 14,000 cubic feet of wood, requiring 2,200 full-grown trees, went to make one vessel. Nowadays, oak had fallen in value, and a great deal came from abroad. Details were then given of the Winfarthing oak and some other great trees, and after this came an interesting account of the processes through which wood had been passed by an ingenious German, in order to form it into a palatable kind of bread. The experimenter generously allowed a young dog the first bite at this, as it turned out, nutritious product. The "cow-tree" of S. America, was next described by the lecturer,

who thus included in his "ramble" some very heterogeneous species, and he went on to introduce his hearers to the giant trees of California, the stories about which, like the trees themselves, are often very "tall." After this, Mr. Holden related a number of legends and superstitions about trees. The ancients believed that the bay tree was never struck by lightning, and at the present day there was a tree with a similar attribute in Mexico. In this country it was a common idea that when the oak leafed before the ash, a fine summer was assured. Mr. Holden then gave a very lucid account of the steaming and bending processes to which wood was subjected to fit it for various human purposes, and both of these processes were experimentally demonstrated to the audience. As the new session of the club (the 47th) will shortly commence, it is now a favourable time for any naturalists desirous of becoming members, to send in their names to the Secretary, Mr. Charles H. Dedman, 1, Cavour St., Kennington Park Road, S.E. The annual subscription is 6/- (entrance fee 1/-). Meetings are held on the first and third Mondays in each month, at 8 p.m., from October to March inclusive, and the first Monday only during the remainder of the year. Outings take place in the summer, and visits to museums, etc., in the winter, and there are reference collections of mollusca, minerals, etc., and a circulating library attached to the Club. Occasionally extra courses of lectures on special subjects are delivered, admittance to such being free to members.

HASTINGS AND ST. LEONARDS NATURAL HISTORY SOCIETY.—The first field day was on Easter Monday, March 26th. About 20 members met at the Memorial, Hastings, their destination being Pett Level, a tract of marsh land to the east of Fairlight Hill. After a pleasant drive of about five miles, a halt was made at Guestling Rectory, to view the splendid collection of lepidoptera, possessed by the Rev. E. N. Bloomfield, F.E.S., one of the vice-presidents of the society, which gave rise to a lively discussion on the subject of protective mimicry, as exhibited by the lappet moth (*B. quercifolia*), the buff tip (*P. bucephala*), etc. The party then returned to the wagglettes and proceeded through the village of Pett to the Ship Inn which is built almost on the beach itself, where several members who had preferred to walk joined the company. The members then took a short ramble across the marsh until 1.30, when they returned to the inn and sat down to the excellent cold luncheon provided by Mr. Keilick. In the dining room a splendid stuffed specimen of the spoonbill (*Platalea leucorodia*) attracted the admiration of the ornithologists. Luncheon over, the members broke up into small groups to follow their own particular studies. Amongst the captures were—four grass snakes (*Tropidonotus natrix*) an adder (*Pelias Berus*), in the process of changing its skin, and a fine mole; the entomologists I believe had a good list of captures, the coleopterists having been very busy in the pools and ditches searching for water beetles. At 6 p.m., a start was made for home and, after an enjoyable drive in the beautiful spring evening the Memorial was reached at 7.45, when the party dispersed; all very well satisfied with their first field day. A very successful meeting was held on Thursday, April 5th, at 8 p.m., in the Museum, Brassey Institute, over forty members being present. The chair was taken by Mr. T. H. Cole, Brit. Arch. Asso, a vice-president of the society who in his opening remarks referred to the field day held an Easter Monday and expressed his pleasure at seeing that so many members had taken part in it. The evening was devoted to the inspection of microscopes, slides, and specimens, and to social conversation. Some fine instruments were on exhibition, including two belonging to the Museum, one to Mr. A. G. Alletsee, M.C.S., and one to Mr. J. Lockey. The secretary stated that the membership roll had now reached 130, which was exceedingly satisfactory considering the short time the society had been in existence. Among the exhibits was a fine, locally taken, clutch of two eggs of the nightjar (*Caprimulgus europaeus*) shown by Mr. Field.—L. A. CURTIS EDWARDS.

HASTINGS AND ST. LEONARDS NATURAL HISTORY SOCIETY.—At a meeting of this society on March 29th, a very interesting paper was read by

Messrs. G. W. Bradshaw and W. Field entitled "Some of the rarer birds of Hastings and district" which title the lecturers defined to mean "Some birds which are rare in Hastings and district." In explanation of this revision the lecturers stated that the dipper and ring ouzel, both common birds in Yorkshire are very rare in this district, the only recent record of the dipper being by Mr. T. Parkin as shot on the Salts, at Boppep in 1884, a specimen of the ring ouzel was shot in the Covehurst, Fairlight Glen, last autumn by Mr. Bennett. The following is a list of the birds shown at the meeting with the dates of their occurrence:—White tailed eagle (*Haliaëtus albicilla*) a female was shot at Wadhurst Park, December 20th, 1893. Peregrine Falcon (*Falco peregrinus*), an adult male was shot in October 1887, by a man named Reed at Fairlight. Buzzard (*Buteo vulgaris*) a fine male was killed at Robertsbridge, December 11th, 1891. Woodchat Shrike (*Lanius rufus*) an adult male was shot at Massam Farm, Fairlight, in May 1892. Pied Flycatcher (*Musicapa atricapilla*) one was shot between March and May 1891, on Sugar Loaf Hill, near Folkestone by Mr. Chapman, of Rye. Bohemian Waxwing (*Bombycilla garrula*) one was shot in the winter of 1892, by a youth named Standen, at Ore, and others were procured at Winchelsea, Westfield, etc. Common Crossbill (*Loxia curvirostra*) an adult male was shot at Ore Place, by Mr. Brooker, about 6 years ago. Great Bustard (*Otis tarda*), a female, weighing 7lbs. 10 oz., was shot by Mr. Charles Cook at Pett Level, in January 1891. Curlew Sandpiper (*Tringa subarquata*) Booth obtained immature specimens at Rye, in September 1858, and one was shot at Rye, September 11th, 1893. Spotted Crake (*Crex porzana*), one was shot on Romney Marsh November 4th, 1892. Sheldrake (*Tadorna vulpanser*), a female, was shot at Pett Level, February 17th, 1892. Garganey (*Anas querquedula*) an adult male was shot at Pett Level last spring, and another at Little Common near Bexhill. Sandwich Tern (*Sterna Cantiaca*) an immature specimen, was shot at Rye Harbour, September 11th, 1893. Little Gull (*Larus minutus*) an adult was shot last January at Bulverhythe, and six immature specimens were procured during the winter. Manx Shearwater (*Puffinus anglorum*) one was caught in an exhausted condition, by a dog, in a garden at Harstgreen, in August, 1882.—L. A. CURTIS EDWARDS.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—April 12th: E. Step, Esq., president, in the chair. The president referred to the great loss the society had sustained by the death of Mr. J. Jenner Weir, who had always taken such an active interest in its meetings, and a resolution was unanimously adopted that a letter of condolence and sympathy should be sent to Mrs. Weir. Mr. Carpenter, exhibited a long series of *Hybernia leucopharia*, Schiff, from Coombe Wood, West Wickham and the New Forest, showing the typical forms in each place, also ova of *Trachea pini perda*, Paur. Mr. Adkin, for Mr. Billups, the following rare Diptera: *Meigenia majascula*, from Dulwich, new to Britain, *Sciomyza rufiventris* from Ireland, *Degeeria pulchella* bred from *Peronea maccana* by Mr. Adkin, *Urellia eluta*, from Lewisham and an unknown species of the genus *Phorbia*; also galls of *Dryophanta divisa* and their maker, with *Synurgus albipes* one of its Inquilines and five parasites viz, *Mesopolobus fasciventris*, *Syntomaspis caudatus*, *Upelmus urozonus*, *Decatoma biguttata* and a *Chalcid*. Mr. Adkin, a drawer showing series of the Genus *Noctua* from various localities especially *N. glareosa* E.S.P. *N. augur*, F. 6; also on behalf of Miss E. Adkin, a bloom of *Tulipa sylvestris* 4, from an old chalk pit in Suffolk. Mr. Moore and Mr. Perks, wood which had been destroyed by Coleoptera. Mr. C. A. Briggs, a number of very striking varieties of *Abraxas grossulariata*, L., similar to those figured in Newman and The Young Naturalist, Vol I. Mr. Jager, a living *Biston hirtaria*, Clerk, stating that he had met with a considerable number of cripples, all malformed on the right side. Mr. Step, a specimen of the Fungus, *Morchella esculenta*, L., received from Wootton under Edge. A communication was read from Mr. Adye on the early season, in the New Forest, Messrs. Step, Adkin, Carpenter, and others taking part in the discussion which followed. The president gave

an interesting account of a curious habit of some ducks in killing toads during the breeding season by dexterously slitting their abdomens.—H. J. TURNER (Hon. Report Sec.)

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—At the meeting on 8th March, Mr. R. Adkin, exhibited a series of *Erebia epiphron* var. *cassiope*, from Inverness, which were said to be of the type form (*epiphron*). He had however failed to detect the white pupil to the ocellated spots which was the typical character. Mr. Weir said that the British form had no trace of the white pupil. Mr. Routledge, specimens of *Selenia bilunaria* which had laid over the summer of 1892, emerging in April 1893. Also individuals bred from a pair of the latter, which had emerged at intervals from August 1893 to February 1894, and were all of the small form, although some had the pigment well developed. He also brought a series of *Aporophyla lutulenta*, captured in Cumberland, among which were both the var. *sedi*, and the var. *luneburgensis*. Mr. South exceedingly large specimens of *Ocnenia dispar*, formerly in the possession of the late Mr. Standish. Mr. Frohawk a third brood of *Pararge megera*, ten males and ten females, bred by himself from ova deposited on August 2nd, 1893. Mr. Billups, three species of rare Ichneumonidae, viz.—*Microgaster russatus*, taken at High Beech in 1884, *Hyperacmus crassicornis* of which only one recorded specimen was known, taken at Oxshot in 1892; and *Euryproctus nemoralis*, taken at the same place last July. Mr. Filer, a series of *Hybernia leucophaearia*, Schiff, taken at Richmond and Epping among which were some exceptionally dark melanic forms. Mr. W. A. Pearce, specimens of *Attacus luna*, and *Citheronia regalis*, from Wilkinsburg, U.S.A. Mr. Jenner Weir, male and female *Heteronympha merope*, and stated that the sexes were so totally unlike as to be deemed different species until quite recently. He also mentioned that the chrysalis was said to be contained in a frail network on the ground. Mr. Williams the local snake, *Coronella laevis*, taken at Camberley, W. Surrey in 1883. Mr. Auld, on behalf of Dr. Knaggs, a working model of the decoy and net described in the "Entomologist," 1893, and a considerable discussion ensued. Mr. Step stated that he had found that the flowers of the butcher's broom (*Ruscus aculeatus* L.) were produced in pairs on the phylloclade, but only one bud opened at a time.—H. J. TURNER, Hon. Report Sec.)

ANSTRUTHER NATURALISTS' SOCIETY.—A Naturalists' Society was formed for Anstruther, Fife, at a meeting held in the Council Chamber, Anstruther, on March 23rd. Among those present were Bailie Sim, Crail; Dr. Ferguson, Anstruther; Dr. Pirie, Pittenweem; Mr. Wm. Berwick, Strathvithe; Mr. D. M'Gregor, St. Andrews; Messrs A. Foster, J. Ross, Brownie, Jackson, H. Watson, and W. Dunlop. Mr. Alexander Foster was called to the chair, and shortly stated the object of the meeting. He held that there was ample scope for the pursuit of natural history in the district, and whether it was by the sea-shore or in the fields, in the highways or byways, in ponds or ditches, the naturalist would find plenty to interest him. He hoped the Society would be formed. Bailie Sim and some others spoke in favour of forming a Society. It was decided to form the Society to be called the "East of Fife Naturalists' Society," and to make the annual subscription 2/6. The office-bearers elected were Mr. A. Foster, president; Bailie Sim, vice-president; and Dr. Pirie, secretary and treasurer. All the others present were elected members of Committee, and were authorised to draw up a code of rules to be submitted to a meeting to be held on March 30th.

THE PRACTICAL NATURALISTS' SOCIETY.—The papers in the *Entomological Circulator*, include one on the Euchelidae, illustrated with coloured drawings (among which is one of the *lutescens* variety of *Calimorpha Hera*), and another on "Some Coleopterous Leaf-mining Larvae." Some useful books (a list of which will be found in the next "Occasional Paper,") have been presented to the library by W. Hawker Smith, Esq. and Miss Edwards.

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The members of the above Society have arranged a series of afternoon rambles for the ensuing season, and the first took place on Saturday March 24th, starting from Belvedere Station, at 1.30 p.m., the party worked the ditches to the river and returning through the marshes to Abbey wood. A good number of specimens were taken by the various members and included *Hydrobia jenkinsii*, *Bythinia leachii*, *Physa fontinalis*, *Physa hypnorum*, and other shells—four or five species of water beetles, newts, (*M. vulgaris*), larvae of dragonflies and many other denizens of pond or ditch water. The second ramble was on Saturday, March 31st., and was again chiefly conchological, many of the species taken the previous week were again represented, and the members who attended were very pleased with the result of the outings. The committee have arranged the list of runs to cover all branches of Natural History, in which members are interested, and hope, at the end of the season for out-door work, to be able to show a good record of specimens from their own district.—ARTHUR S. POORE.

GUERNSEY NATURAL SCIENCE, SOCIETY.—The attendance of the members at the last monthly meeting March 7th, was larger than usual. Mr. E. D. Marquand, president, occupied the chair. Mr. Luff mentioned that the small tortoiseshell butterfly was seen by Mr. Derrick and Mr. Randell, on February 24th, which was an early date for its appearance. He (Mr. Luff) had met with a large number of dead sea birds, many of them being puffins, on March 4th, on the beach at Petit Port near Moulin Huet. The singularly destructive effect on vegetation of the recent extremely cold weather, was mentioned and many instances noted. Mr. Marquand then opened the discussion on "The Divining Rod" in a very interesting address, quoting a number of curious recorded instances in which its supposed effects, as an aid in finding water or minerals, were attested by credible witnesses, who seemed to be themselves quite satisfied with the genuiness of the results. It was largely believed in among the Guernsey people, and its use was frequently resorted to. Mr. J. Linwood Pitts, Hon. Sec. of the Folk Lore Section, said he had invited a gentleman to be present, whose services were in wide request for finding water by means of the divining rod. This gentleman, would have come with pleasure to explain his experiences, but an important Masonic gathering that evening, had kept him and also several members of the Society away. He had, however, very kindly lent him (Mr. Pitts) a specimen of the rod which he used, and which he now handed round to the members for examination. He was said to have been very successful in most cases in indicating where water would be found. The movements of the rod in his hands, when searching for water, he described as being entirely beyond his control, and he could offer no explanation of its cause. It dipped down forcibly when passing over a hidden spring; but when held over an open-well, strange to say, its deflection was upward. Mr. Pitts said that until recently he himself had paid but little attention to the theory of the divining rod. It interested him chiefly as a question of folklore, and of very ancient belief. Seeing, however, that its virtues were so extensively believed in in Guernsey, he thought it was well worth further consideration, and he regretted that this gentleman was not present to show them his exact method of practice when actually searching for water. Mr. A. Collenette then gave his views on the subject. He had brought with him a considerable number of freshly cut rods, which are always of a forked shape like an inverted *y*, thus, . The two forked ends are grasped firmly in the hands of the diviner, and the point of the rod then begins to show a downward tendency, however tightly the ends may be held. Mr. Collenette said that the objection he had expressed at a previous meeting, to discussing the question at all, was based upon the fact that, for the last fifty years at least, a perfectly clear explanation of this so-called phenomenon, had been known to scientific men, and therefore he did not see the use of re-opening the discussion. The remarks he was about to make, would he believed, convince his hearers that there was nothing whatever mysterious about the appearances that were ob-

served, but that they were nothing more than the simple outcome of physical force applied in a certain way and under certain definite conditions. They would notice that the rods must always be forked or arched. A straight rod would give no indications, no matter by whom it was held. And again the extremities of the two forked branches must be further bent out at an angle, and be grasped in a particular way. These conditions imparted a special kind of leverage to the rod, so that the more firmly it was grasped, the more forcibly would it be deflected. He wished particularly to say that, in offering this purely mechanical solution of the so-called mystery, he did not, for a moment, wish to convey the reputed "diviners" were acting with conscious deception, or were trying to dupe their patrons. Not at all. They were themselves deceived, either through not knowing, or not applying their knowledge, of the physiological action of the muscles of the hand as then brought into play. When a monkey closed its hands, it closed all its fingers at once. It could not move them separately, and independently one of the other. The large flat muscle which controlled its fingers, moved them all at once. But not so in man. He could close his fingers separately. Now, given this independent, and often involuntary, action of the fingers, on the strained fibres of the forked divining rod, added to that mental tension in the diviner which was likely to supervene under those conditions of searching for hidden springs, and you got exactly the mechanical power that was necessary to impart the motion to the rod. The more forcibly the diviner grasped the rod, the more forcibly did he thus give motion to it. The very power that he thought—that is, if he did not understand the dynamics of the case—ought to steady the rod and hold it rigid, was just the power that was setting it in motion. The reason why the rod moved with some men and not with others, was that some had much more mobile hands than others had. A pianist or violinist would generally find the rod move readily with him, because he was accustomed to the facile movement of his fingers separately. Mr. Collenette illustrated his theory by diagrams on the blackboard, and also by the various rods he had prepared—one of which was made of numerous strands of wire—and showed the movement he referred to. Many of the members also tried the experiment for themselves, with varying degrees of success. In actual practice there would naturally be various more or less modifying features, but Mr. Collenette contended that the actuating principle was in every case the simple mechanical one he had explained. As regarded water being found by diviners, he said they were generally local men, who knew a great deal about the neighbourhood they practised in, and who often unconsciously brought this knowledge to bear with very good results, at the same time that they thought the rod alone was leading them to the hidden sources. The processes of thought, as translated into muscular action, were far more complex than many people had an idea of. They often seemed so instantaneous and independent that we failed to realise the many separate and inter-acting elements of which they were made up. Mr. Allen then cited a case where a diviner in England went over a field and indicated several positions where the rod dipped and he said springs existed. These points were duly marked. The man was then blindfolded and turned round; after which he was once more led over the same ground, but in no single instance did the rod again indicate the same sites. Mr. Marquand and several other members felt quite convinced that Mr. Collenette's theory was the correct one, others, on the contrary, while accepting it to some extent, considered that there were also some points for which it did not fully account, and which they would like to have further elucidated on some future occasion. One special point being that according to this theory, the effect, when obvious at all, ought to be a cumulative or an increasing one, whereas, the motion of the rod in the hands of an expert, was said to fluctuate in a totally different way. Mr. Collenette thought this objection might be adequately met by considering the changing mental conditions and the anxiety for success, on the part of the diviner engaged in the quest, which would be reflected through the muscles to the rod.

RURAL NOTES AND OBSERVATIONS.

ROYSTON, CAMBS.

March 18th: Rooks very busy building. Bees working well; and early swarming may be expected. Queen wasps moving about.

March 27th: Missel thrush and song thrush nesting. Butterflies and moths appear in numbers. Blackthorn in blossom. Chaffinches beginning to build. This is early.

April 1st: The common white butterfly has appeared early and in considerable numbers.

April 5th: A brood of young hedge sparrows hatched this morning.

April 8th: It is with deep regret I have to record the death of Mr. W. Norman, who for many years carried on the business of taxidermist and naturalist in this town and who often assisted me in my notes, he was a keen observer and a good field naturalist, he also possessed a great deal of general information on zoological matters, and I am sure I am expressing the sentiment of very many, that we have lost a really useful and painstaking man.

Rooks retaining the feathers on the base of the bill until the spring are not uncommon, my late friend Mr. Norman showed me one only a very few days ago.

April 10th: Most beautiful, day 70° in the shade, sparrows very busy building. Nightingales singing. Swallows arrived.

April 13th: Rooks hatching. A lark's nest with clutch of eggs found to day. I have no record of such an early nest.—RAMBLER.

RECORDS AND OBSERVATIONS.

REPTILIA.

Ringed Snake and White Viper near Taunton.—On April 6th, I captured a very fine specimen of ringed snake (*Tropidonotus natrix*) in a coppice at Fivehead. Length of body, over four feet, girth nearly four inches. The ringed snake is very plentiful about here, but this is the finest specimen I have seen. Near the same spot I captured a specimen of the white viper (*Pelias beras*), I believe this to be uncommon, I have not seen a specimen of it before in this locality; it was of a very light hue, almost white; the rhomboidal markings very distinct and clearly defined. It was basking in the sun, stretched full length on the dry grass; it glided under the dry leaves as soon as it saw me, but came out again subsequently, and I had a good opportunity of making its closer acquaintance. It seemed about two feet long, but I did not capture it.—Rev. A. C. DENMAN, M.P.N.S., Fivehead, Taunton, Somerset.

INSECTS.

Butterflies at Fivehead Somerset.—In the woods in the locality of Fivehead I saw on the wing March 28th *G. rhamni* *V. to* and *V. urticæ*, and on April 10th *P. Adonis* *L. Elgeria*, *H. hyperanthus* and *E. Cardamines*.—Rev. A. C. DENMAN.

Nyssia Zonaria at Wallas.—On Good Friday I took my annual trip to New Brighton. We have been having some grand weather so I thought zonaria would be out. After seeing to the inner man at New Brighton I started off for the sand hills and arrived about 11 a.m. For two hours I had poor success, but patience and perseverance at last, was in my favour, and I took as many males as I cared for; females being the chief object of my visit I took a few, and

have got some Ova. Perhaps some of our friends will write to me if they want a few, and exchange for Ova or Pupæ.—JAMES GRIME, 243, Holliwell Rd., Bolton.

Braphos Parthenias at Reading.—I have taken four orange underwings (*B. Parthenias*) flying high over beeches.—J. R. WHITE, Talbot Lodge, Castle Street, Reading.

Butterflies at Gloucester.—*Vanessa C. album* was flying at Longhope on March 2nd. On the 26th it was fairly common at Wainloads Hill, also on the 29th at Barnwood. On April 2nd, *Argynnis Euphrosyne* was seen at Painswick, as was also *G. rhamni* and *A. cardamines*.—A. LIONEL CLARKE, Gloucester.

BOTANY.

Plants seen in flower in March.—At Fivehead, Somerset, saw the following in flower: *Primula veris*, *P. officinalis*, *Anemone nemorosa*, *Ranunculus ficaria*, *Lamium purpureum*, *Fragaria vesca*, *Hyacinthus non-scriptus*, *Tussilago farfara*, *Euphrasia officinalis*, *Stellaria graminea*, *Caltha palustris*.

Flowers in April. *Alliaria officinalis*, *Vinca minor*, *Arum maculatum*, *Oxalis acetosella*, *Myosotis palustris*, in addition to the foregoing.—Rev. A. C. DENMAN, M.P.N.S., Fivehead, Taunton, Somerset.

MAMMALS.

Otter on the Severn.—A fine dog otter was discovered on the morning of Sunday February 4, lying on the railway near Gatcombe, Herefordshire, having evidently been run over by a train. Otters are very rarely seen on the Severn but are more numerous on the Wye.

BIRDS.

Early breeding of the Wren.—On February 4th a wren's nest was found in a pigsty at Donington, Gloucestershire, the hen sitting.—A. LIONEL CLARKE.

Motacilla alba at Highgate.—I thought it might be of some interest to the readers of your journal to know that I saw a splendid specimen of the white wagtail (*Motacilla alba*) here on February 24th; it was in company with a pied and a grey wagtail. This is rather a rare species in this neighbourhood; I have never seen it here before.—B. R. HARRISON, Highgate, N.

ORNITHOLOGICAL NOTES FROM FIFESHIRE.

Several of our summer migrants have come; the cuckoo was heard on the 2nd. I have noticed a large flock of Wheatears during the last few days. They arrived in a grass field about mid-afternoon, flying straight against the S.E. wind. They fed for about an hour and then resumed their flight. On the 4th April, two eggs of the long-eared owl were found in a rook's nest containing four eggs of the latter. I believe it is rather uncommon to find a hooded crow's nest built on a tree inland; one was found some two years ago at Grigston about fourteen miles from the coast. Further more I am inclined to think that the carrion and hooded crows sometimes mate, as young birds have been found in one nest, some black like the carrion crow and others marked like the hooded.

At Anstruther there may be seen a rook's nest built in a very unusual place, viz., in a chimney can on the top of the Commercial Hotel. It seems that last year a pair of rooks were seen to be chased from a rookery which is quite opposite. The same occurrence happened this year although they endeavoured to build, but alas! the others ultimately succeeded in destroying their nest, after which they were forced to find more peaceful quarters whence they took up their abode in the chimney can. Moreover, the smoke was issuing from the can in which the nest is built, when they began their operations, but, through the kindness of the proprietor of the Hotel, I am glad to say he ordered the fire to be left unkindled during the rook's sojourn above. I yesterday noticed the

female sitting peacefully on her nest while her mate was perched on an opposite chimney surveying the landscape around.—WM BERWICK, M.P.N.S., Anstruther April 13th.

ORNITHOLOGICAL NOTES FROM READING.—A single pair of rooks have established their nest in a tall elm in the town of Reading. There is no rookery within half a mile or so from them. I believe they have eggs or young already and will no doubt rear their young unless disturbed. Is this not a rather singular circumstance? Some years ago a pair tried to build in the same place, but did not succeed. Birds are rather early nesting this year. I have already found the following nests, March 24th, Three thrush's with eggs. 31st, Missel thrush's with three eggs hard set, and two blackbird's. April 2nd. Several thrush's with eggs and young. 4th, Hedge sparrow's with eggs. 7th, Blackbird's with young.—J. R. WHITE.

THE WILLOW WREN. (*PHYLLOSCOPUS TROCHILUS*.)

The willow wren is one of our earliest summer visitors, and one of the most welcome, generally arriving here about the first or second week in April and leaving about the beginning of October. It frequents the margins of streams and brooks, where osiers and willows abound, and hence its name. It is a very restless little bird, running along the branches and pecking at the leaves, bringing to an untimely end thousands of insects and flies upon which it feeds, and is also very dexterous in capturing them while on the wing; a sharp snap of the beak denotes that the desired object has been attained. He is not of a shy disposition, and can often be approached within a few yards, when busily engaged on moss covered banks or ferny glades. Although the song has little variety, it is very pleasing; soft and mellow, and generally poured forth from the higher branches of a moderate sized tree, but sometimes while on the wing; it consists of syllables *teo, toi*, pronounced several times in succession, beginning with the highest notes, and gradually getting softer, and descending in the scale. The nest, which is an oval structure, is composed of grass, moss or ferns corresponding with the surroundings, and lined with feathers; it is placed on the ground among long grasses near the outskirts of a wood: it is very carefully concealed, and difficult to find, unless the bird be closely watched. I found one this year which had five eggs in; after visiting it once or twice, the bird, apparently knowing of my visits, cleverly hung a black feather right over the entrance of the nest (which is always at the side) thus completely concealing the eggs from view. When the nest of the willow wren is approached, the bird will fly out and pretend it cannot fly any distance, hopping along the ground with one of its wings hanging down and apparently broken; but when a good way from the nest, will fly up to some tree near, and before long will find her way back to the nest again. This is done simply to attract any stranger away from the nest; anyone seeing the bird during this performance, and not up to these tricks, would naturally think it wounded and try at once to catch it; but the little strategist takes good care to keep well in front of the pursuer. In the number for May 1893, I notice a correspondent writes that he has taken a nest of this bird at an elevation of seven feet from the ground, this is undoubtedly a rare occurrence.—B. R. HARRISON, Highgate.

EDITORIAL NOTES.

Our late editorial chief, Mr. H. K. Swann, by whose exertions the *Naturalist's Journal* has been raised to its present high position among scientific periodicals, being unable to give the time and attention needed to the carrying out of the numerous improvements contemplated by the proprietors,

the work of conducting the magazine will, as announced last month, be in the hands of Messrs. A. Ford and Albert H. Waters B.A. (late co-editor of the *Garner and Naturalist's Gazette*), who have already for the last eight months acted as assistant editors.

We reserve till our next number fuller details of our plans for the future but we can assure our readers that we intend to give them more than their money's value and that the *Naturalist's Journal* will be a marvellous two pennyworth. In the hands of the new editors the interests of not only entomologists and ornithologists but also conchologists, botanists and geologists will be well looked after and it will be our earnest endeavours to place this magazine in the front rank of contemporary scientific literature and with a staff of the best writers on natural history we can procure we are confident we shall succeed in our efforts. All we ask is that our subscribers second us by making the magazine known to their friends and obtaining for us increased support. We want our circulation to be quadrupled with the new volume, when we shall make such improvements as will astonish our friends.

In the December number of this magazine (page 82), there appeared a notice from the "People" September 10th; stating *Apatura iris* had been found in great quantities at Rotherham, Yorks. This is an error, a correspondent writes us, that *A. iris* has never been recorded from Yorkshire, and he has found out that the notice was sent by a farmer who knew nothing whatever of lepidoptera and the species observed was only the common "Red Admiral" (*Vanessa atalanta*)! This is another instance of the remarkable and erroneous statements which appear so frequently in some of our leading papers.

Those subscribers who require back numbers of the present volume in order to complete their sets are urged to send for them without delay as the supply is rapidly being exhausted. At present the price is 2½d each, post free, but in the case of some numbers of which we have only a few left, it will be necessary speedily to charge an increased price.

TO CORRESPONDENTS.

To CONTRIBUTORS.—We receive such a large number of manuscripts from all parts that we should advise our friends to let us have their articles as *early in the month* as possible. Although notes *may* be sent up to the 15th., the insertion of longer articles cannot be guaranteed for the following month if received later than the 8th or 10th and notes and observations unless *very* important may be "crowded out" if sent later.

T. EDWARDS.—I name your shells for you with pleasure but as the list is too long to print here will send it you by post.—A. H. W.

S. V. H., E. S. B. and others.—Many thanks for your kind expressions. We are determined to make the N. J. the *best* natural history journal in existence.

E. F. Atkins.—Your "Chapters from the life of a Bird" and very interesting "Notes from Hants" shall appear later on.

INQUIRER.—The P. N. S. is a cosmopolitan Society and has had in its ranks members residing in Canada, Nova Scotia, United States, France, Germany, Egypt, etc. Colonial and foreign naturalists are as welcome as ever and invited to communicate with the Secretary.

Dear Sir, Will you kindly correct an error in the letter which records my captures of new Diptera last year. *Eristalis libatrix* should be *Exorista libatrix*. This, was probably new to Britain at the time I took it, but another has since been recorded from Colchester. Apologising for troubling you, Yours faithfully, W. W. Esam, Eagle House, St. Leonards, March 17, 1894.

7 JUL. 94



WANTED.—Dredgings and clays containing Foraminifera. Will give in exchange various dredgings, named specimens, or slides and material in other departments of microscopy. Correspondence with parties interested in the subject of Foraminifera desired.—F. S. Morton, No. 158 Cumberland street, Portland, Maine, U. S. A.

WILL Exchange flint implements (large quantity of Thetford and Santon Downham types) for duplicates from other parts. Also exchange duplicates with other collectors in fossils minerals and shells —W. G. Clarke, King St., Thetford, Norfolk.

WANTED.—American or Foreign Birds' eggs in exchange for British eggs or Butterflies.—Mrs. Benyon, Stukeley Hall, Huntingdon.

WANTED.—Yarrell's "British Birds." Will exchange "The National Encyclopœdia" 13 vols, excellent binding; no leaves out.—Edward J. Penberthy, Illogan Ch. Town Redruth, Cornwall.

WANTED.—Larvæ of *Dominula*, *Plantaginis*, *Villica*; fertile ova *Fraxini*, *Nupta*, *Promissa*, *Sponsa*, *Pyri*, *Yama mai*, *Io*, *Atlas*; Foreign butterflies in papers, any odd parts of Barret's 'Lepidoptera of British Islands.' Exchange for Lepidoptera.—J. Bates, 19 High Street, Wellingborough.

WANTED.—Cuckoo's eggs, with clutches of foster parents; also clutches of owls, rock dove, woodpecker, water rail, and many others. Good eggs offered in exchange.—W. Wells Bladen, Stone, Staffordshire.

FOR Exchange.—Hemiptera: *Salda C-Album*, *S. scotica*, *Plesiocoris rugicollis*, *Megaloceroea ruficornis*, *Flagiognathus Wilkinsoni*, etc, all well set out. Desiderata: Aculeate hymenoptera, hemiptera, or coleoptera.—T. M. M'Gregor, The Mills, Horse Cross, Perth, N. B.

I AM starting, with a friend to collect butterflies, beetles, etc: Will some young naturalists in different parts, also commencing, communicate, and arrange to exchange specimens, found in different localities. Enclose stamped envelope for particulars.—Robert F. McConnell, Thistlebank, Dumbarton.

DUPLICATES—*Cicindela campestris*, *Anchomenus thoreyi*, *Bembidium Mannerheimii*, *Stenolophus exiguus*, (var. *luridus*), *Blechrus maurus*, *Philonthus varius*, *Hydroporus inaequalis*, *H. melanocephalus*, *Laccophilus hyalinus*, *Helocharis lividus*, *Omosita discoidea*, *Stroposomus retusus*, *S. coryli*, *Trachyphloeus scabriculus*, *Hypera nigritors-tris*. Desiderata, British Coleoptera.—G. D. Turner, The Grampians, St. Helens Road, Hastings.

SCIENCE Gossip 1888-92; 60 Nos; also the following rare British shells, *Fusus Norvegicus*, *Fuscus Turtonæ*, *Islandica*, *Buccinum Pelagica*, *Isocardia Cor*, *Xylophaga Dorsalis*, *Mediolanum Nucula*, *Arenaria Peltulifera*, *Scalata Turtonæ*, offers:—A. J. R. Slater, 43, Northgate, and 8, Park Terrace, Brixton.

FOR Exchange.—For Scottish Geographical Magazine. Contains interesting articles by well known writers upon various subjects, with geographical maps and charts, with each number, unbound.—Also Journal of the Society of Arts unbound.—S. Varville Henderson, M.P.N.S. 66, Dundonald Road, Kilmarnock, N.B.

OFFERED.—*H. hortensis*, vars. *albina*, *lutea*, *lilacina*, and *arenicola*. *H. nemoralis*, vars. *rubella*, *carnea*, *C. rophii*, *C. laminata*, *By. leachii*, *L. glabra*, *Hy. jenkinsi*, type and var. *cristata*. Wanted—*H. obvoluta*, *L. burnetti*, *T. haliotidea*, *T. seutulum*, *T. mauei*, *H. pura*, *C. bispicator*.—Arthur S. Poore, Seivour Cottage, Abbey Road, Belvedere, Kent.

WANTED.—Odd parts any following: Cassells' Canary and Cage Birds; Familiar Wild Birds; European Butterflies and Moths; Strand Magazine, Vol. 1 and 2; exchange books, etc., list sent.—Davis, 33, Brighton Terrace, Brixton, London.

SHARK'S jaw, full teeth, flying fish, stuffed canary, fossils, viperous lizards (alive), Vol. 1 Scientific Facts; Wonders of the Microscope, cloth; and other things, lists exchanged.—W. Clifton, 38, Brighton Terrace, Brixton. London.

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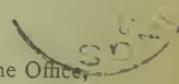
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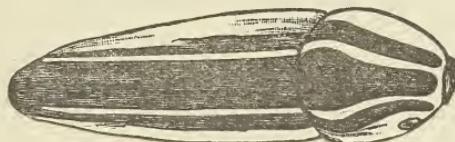
JUNE, 1894.

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**NOTES ON THE VARIATION AND
DISTRIBUTION OF BRITISH SLUGS.**

By E. W. SWANTON.

Concluded from page 167.



Arion elongatus (after Collinge).

ARION *fasciatus*, Nilsson. Collinge rightly re-instates Nilsson's name giving as synonyms, *A. circumscriptus*, Johnst., *A. bourguignati*, Mab., and *A. ambiguus*, Pollonera. Distribution. The census gives sixty-eight counties. It is tolerably common at Wychling, Kent, Southampton, and many parts of Somerset.

Variation. Four vars. are recorded for Great Britain. Var. *neustriacus*, Mabille (=var. *subfusca*, Roebuck.) A common form.

Var. *flavescus*, Cllge. Not uncommon.

Var. nov. *griseus*, Cllge.

Var. *armoricana*, Pollonera. Recorded from Sturminster.

Marshall, Dorset, by Mr. Cockerell.

Genus. *Geomalacus*. Allman.

Species. *Geomalacus maculosus*, Allman.

It occurs in Ireland only, and was discovered in 1842, by Mr. W. Andrews, "on rocks around Lough Carrough, to the south of Castlemain Bay, Co. Kerry, in the west of Ireland." Described by Professor Allman in a paper read by him in 1843, before the

Dublin Natural History Society.

Variation. Mr Cockerell, in the British Naturalist's Catalogue of L. & F. Moll: gives five varieties, but they are not recorded in Collinge's recent Catalogue of the Slugs.

Family *Testacellidae*.

Genus. *Testacella*, Cuvier.

Testacella haliotidea, Cuvier.

Distribution. The census records it for eight counties, with no records for Wales and Scotland. Variation. The var. *scutulum*, is now acknowledged to be a distinct species.

Testacella scutulum, Swby. Until quite recently, was considered to be a variety of *T. haliotidea*, but was rightly re-instated as a valid species, when Mr. Charles Ashford re-investigated the anatomy.

Distribution. The census gives thirteen counties; no records for Wales or Ireland.

Variation. Collinge acknowledges Cockerell's var. *pallida*, and excludes his vars. *typica* and *aura*.

Testacella maugeri, Fér.

Distribution. The census gives nine counties; no records for the north of England and Scotland. I have seen examples taken from a nursery garden at Castle Cary, Somerset. One variety occurs, viz. *viridans*, Morelet.

Family *Limacidæ*.

Sub-family, *Limacinae*.

Genus. *Limax*, L.

Sub-genus. *Heynemannia*, Malm.

Limax maximus, L.

=*Limax cinereus*, Mull.

Distribution. The census records it for seventy counties. An addition is Co. six, N. Somerset. It occurs frequently at Bratton St. Maer, with the vars. *maculatus*, *fasciatus*, and *cellarius*; and with the former variety at Doddington, Kent, and Southampton. Variation. Seventeen vars. are mentioned in Collinge's catalogue, but *cinerinus*, Moq., is doubtful. The var. *lilacina*, Rbk. is a sub-variety of *krynickii*, K. il. 1851.

The variety *cinero-niger*, is regarded by the Conchological Society, and Mr. Cockerell, as a distinct species; indeed, Mr. Roebuck has gone so far as to say there are important anatomical differences. Both Simroth and Scharff regard it as a variety, and quite recently Collinge has made a minute examination of the anatomy, and fully agrees with these authors.

Limax tenellus, Nilsson.

Given as doubtful in Collinge's Catalogue of British Slugs, and in the Conchological Society's List. Gwyn Jeffreys, in his *British Conchology*, says:—"a single specimen was found by Mr. Blacklock in a wood at Allansford, near Shortly Bridge, in Northumberland." Its claim for recognition as a British species being

so very small, it should be struck off the list of British slugs.

Sub-genus, *Lehmannia*, Heym.

Limax variegatus, Drap.

=*L. flavus*, Auctt.

Distribution. The census for thirty-four counties. I have taken it in woods at Doddington, Kent. The Conchological Society follow the old nomenclature=*L. flavus*. There are seven known British varieties.

Limax marginatus, Mull., 1774.

=*L. arborum*, B. Ch., 1838.

Collinge was the first to rightly give the nomenclature and synonymy of this species (see *Conchologist*, Vol. 1, p. 9-10), which the Conchological Society has so mixed up.

Distribution. The census for forty counties. An addition is east Kent, Co. 15, it occurs at Doddington and Wychling, near Sittingbourne, it is also fairly common in woods at Bratton St. Maur, Somerset. Eight varieties are recorded, but var. *maculatus*, Rbk., is doubtful.

Genus, *Agriolimax*, Malm.

Agriolimax agrestis, L.

Distribution. The census for one hundred counties. It is a very common species. I have observed it, also the var. *nigra*; at Bratton St. Maur, Somerset, with *nigra* and *sylvaticus*, at Wychling, Kent, and with *griseus* at Southampton. There are ten varieties, but *lilacinus* Moq., is doubtful, yet acknowledged by the Conchological Society, whilst the var. *griseus*, Ckll., is excluded!

Agriolimax laevis, Muller.

Distribution. The census records it for twenty-two counties.

Cockerell's var. *maculatus*, is acknowledged by Collinge and other authorities, yet excluded by the Conchological Society from their recent list.

Genus *Amalia*.

Section *Pirainea*, Pollanera.

Amalia gagates, Drap.

The census records it for twenty-four counties. I have taken it commonly in the gardens at Wychling Rectory, Kent. There are three varieties, *plumbea*, Moq.; *rava*, Ulms; and *olivacea*, Moq.

Section *Tandonia*, Pollonera.

Amalia soverbyi, Fér.

=*A. marginala*, Brit. Auctt.

Collinge was the first to rightly give the nomenclature and synonymy of this species, as well as that of *L. variegatus*, before mentioned, (see *Conchologist*, Vol. 1., p. 10.) The census records it for thirty-two counties. I notice it is very common at Southampton. There are two varieties, *bicolor* and *nigrescens*, described by Cockerell. The Conchological Society gives a variety *nigri-*

scens, Roebuck.

Twenty-two species (including the doubtful *L. tenellus*) have been mentioned in these notes, comprising the total number known to occur in the British Isles at the present time.

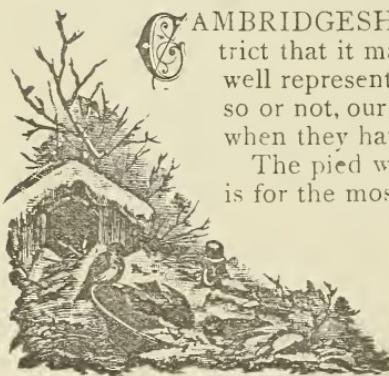
The Conchological Society's List of British Land and Fresh-water Mollusca, issued as recently as 1892, records only eighteen species (with *L. tenellus*), and of that number *Limax cinereo-niger* (as previously remarked), is only a variety of *Limax maximus*. This shows, and very prominently, the attention malacologists are giving to our slugs. Mr. W. E. Collinge, of Mason College, Birmingham, is making a special investigation of the *Arionidæ*, and would be pleased to receive examples for identification, with his kind permission, I was enabled to reproduce the drawings of *Arion flagellus* and *Arion elongatus*, in this paper; and I now take the opportunity of thanking him for that, and many other kindnesses.—Bratton St. Maur, February, 1894.

THE BIRDS OF CAMBRIDGESHIRE.

By ALBERT H. WATERS, B.A.

Continued from page 149.

MOTACILLIDÆ.



CAMBRIDGESHIRE is such a well-watered district that it may be imagined the wagtails are well represented therein. Whether they are so or not, our readers may judge for themselves when they have read the following notes.

The pied wagtail, *Motacilla lugubris* Temm. is for the most part a summer visitor. A very few individuals stay all winter but most go further south in the autumn and return about the third week in March, when they may be seen running about the margins of the rivers and fen drains, feeding on the insects

and small fish, and often going into the fields a distance from the water. It is a very fearless bird and easy to observe, and it is a pretty sight to see it running about by the margin of the Cam, so eager after the water insects cast up by the wash made by the oars of the practising eights, that it pays no heed to the galloping nags ridden by the "coaches" on the banks.

Its popular name here is the "water" wagtail, and its nests are diligently sought after by the boys, who find them in deep holes in old stumps of trees, etc., and I find by reference to one

of the old journals which I kept in my school-boy days that I used to find them in holes in pollard willows. I have had numbers of eggs and find them vary both in size and colour.

The one or two individuals to be seen in the winter lose the black colouring on the chin and part of that on the throat, and have it replaced with white, but a black collar, as it were, remains round the neck.

The continental white wagtail, *Motacilla alba*, is only an occasional visitor and I have never found its nest. When I have seen it it has been in either March or September. The most recent of my records respecting it are, Horningsea, March 24, 1893; Ely, March 29, 1893; Chesterton, March 23, 1894.

The grey wagtail, *Motacilla melanope*, Pall., is one of our winter birds and leaves the county in the spring for the districts where it breeds.

The blue headed wagtail, *Motacilla flava*, is occasionally to be observed in the more northerly part of the county, but is very rare indeed near Cambridge. It is a bird which loves to be near the sea coast and, if it breeds anywhere in Cambridgeshire, it would be the neighbourhood of Wisbech.

The beautiful, canary-like, yellow wagtail, *Motacilla raii*, Bon., is common on the banks of the Cam, Ouse, and Nen, and in the adjacent fields, where it makes its loosely constructed nest of dry grass, fibrous roots, moss, and wool and lined with hair. I have not seen any particular variation in the colouring of the yellowish freckled eggs excepting that sometimes there is a black waved line at the large end which in other specimens is absent, and some have the ground colour inclined to pinkish grey. There is not much variation, either, in the plumage of the birds, excepting that the very few, which I have seen here in the winter, are not nearly of such a bright yellow as the summer birds, but have some of the feathers nearly white. The yellow wagtails nearly all leave us in September, but I saw one at Chesterford, on February 8th, of the present year. The migrants return about the 27th of March as a rule.

Before leaving the wagtails I cannot refrain from giving expression to my regret that the nomenclature of the *Motacillidae* is in such a chaotic state.

To be continued.

THREE MILES IN THE AIR IN SAVOY.

By M. BURR.

Some people may have heard of Mt. Revard, but for the benefit of those that have not, I will explain that it is a mountain near Aix-les-bains in that most beautiful department of France, viz.

Savoy. On the top, at an elevation of about three miles or more, is a most comfortable little hôtel. The view is splendid and one can easily see Mt. Blanc about sixty miles away. In the opposite direction the cross of Chartreuse can be seen with a telescope.

In this beautiful spot, I spent four most beautiful days.

We reached Aix-les-bains early in the morning of September 12th, 1893, after having travelled all night on our way from Paris.

We ascended the mountain in a little train, and passing through the clouds we reached the hôtel about twelve o'clock. The day was cool and we were fortunate enough to see several alpine swifts (*Cypselus Alpinus*) and in the afternoon a large hawk. My chief regret was that I could only tell the names of a limited number of the birds I saw as my knowledge of the avifauna of that part of the world is, I am sorry to say, smaller than is to be wished.

After lunch I went exploring a bit through the pine woods. I saw a *Parus caudatus* but later on, to my intense delight I saw a large eagle soaring above me. I suppose it was an *Aquila chrysaëtos*. It came down fairly low and I could easily see it through the glasses; in a few minutes however it disappeared over a ridge.

The next day was intensely hot, so I took out a butterfly net and caught *Hesperia comma* (♀), and *Lycæna Alexis*, also a large number of black grasshoppers with red underwings; called *Ædipoda fasciata*. These may be seen in the Natural History Museum, South Kensington. They are in the case in the hall, nearest the staircase and are on the top left hand corner of the case as one stands with one's back to the stairs. It is the case showing instances of natural protection as, although this insect can be both easily seen and heard, when flying it comparatively disappears when it settles, owing to only the dark parts being visible. I caught some very large green grasshoppers too, in great quantities. I caught a *Lycæna agestis*, also but it escaped through a hole in the net. The next day was as hot as the former.

I caught an *Æschna Cyanea*, *Hesperia comma* (♂), *Lycæna Alexis*, and several *Ædipoda fasciata* and several lizards. I saw a *Saxicola Ænanthe* and heard a raven (*Corvus corax*) croaking and saw a *Colias edusa*.

The next day resembled the preceding. One could easily see Mt. Blanc from as much as appeared above the mountains right up to the top, which is said to be a rare sight. Caught a *Graptia C-Album* and *Gonepteryx Rhamni*, and *Carabus violaceus* saw two more eagles and a pair of *Corvus corax* and some *Anthus petrosus*. Walking in the woods we disturbed a large light-coloured hawk sitting on a tree but I could not tell of what species. In one narrow ravine we saw several birds resembling jays in shape and style. They seemed quite tame and settled very close to us on the trees. The air in such hot weather was filled with an incess-

ant chirring from the grasshoppers flying and the whole place seemed alive with them.

The next day however was not so hot and to my regret we had to leave Mt. Revard, after a very enjoyable stay. We went down again in the train passing a lot of vineyards on the way. It grew hotter as we got lower down until in Aixe-les-bains it was almost stifling. And so ended a most pleasant stay in Savoy for the next morning we started for Paris, homeward bound once more.

IN MEMORIAM. ERNEST ATKINS.

It is with the deepest regret that we learn the sad news of the untimely death of the promising young editor of the *Sussex and Hants Naturalist*. As one of our most valued correspondents and a fellow member of the Practical Naturalist's Society we feel that in him we have lost a friend. He was a most clever young naturalist and it is unspeakingly sad to see such a scientific career as lay before him cut short at so early an age. He had been a student of God's creatures from his earliest years and before he reached his teens had contributed articles to various papers and periodicals. He leaves behind him a completed work on the "Birds of Eastbourne and District" which will be shortly in the publisher's hands.

THE BIRDS OF MANCHESTER.

By J. E. SANDERS.

(Concluded from page 163.)

Starling, magpie, jackdaw, carrion crow, rook, skylark, swift, and nightjar, are all common. The green woodpecker (*Gecinus viridis*), occurs rarely. The great spotted woodpecker (*Dendrocopis major*), and the lesser spotted woodpecker (*D. minor*), are scarce, but have both occurred at Clifton.

The king-fisher is not uncommon in the Knoll Valley; hoopoe, once shot at Clifton.

Cuckoo, common. Barn owl, common; short eared owl (*Asio accipitrinus*), scarce; tawny owl (*Syrnium aluco*), scarce.

Sparrow-hawk, merlin, and kestrel, common: osprey, once shot at Heaton Park; heron, common. Wild duck, (*Anas boscas*) common in winter. Ring dove, turtle dove and partridge, common. Quail, scarce; corn crake (*Crex pratensis*) common; spotted crake (*Porzana maruella*), scarce; one was shot at Verutlebury, November, 1891; water rail, common; water hen (*Gallinula chloropus*) common; dotterel, rare, once shot at Prestwich; golden plover, common in winter; lapwing, common; woodcock,

common; has been known to breed near Manchester. Snipe, jack snipe (*Gallinago gallinula*), and common sand-piper (*Totanus hypoleucus*), common. Common tern (*Sterna pluvialis*), occasionally seen on the river Irwell; black-headed gull (*Larus ridibundus*); common gull (*Larus canus*) and kittiwake gull (*Rissa tridactylus*); all common in the winter.

FIELD CLUBS AND SOCIETIES.

PRACTICAL NATURALIST'S SOCIETY.—A most interesting discussion is being carried on in the Ornithological Circulator upon the subject of "Our Decreasing British Avifauna" initiated by a paper by Mr. W. G. Clarke. We wish our space permitted us to print this valuable paper in full, replete as it is with information about the birds of Thetford, Norfolk, and the neighbourhood. The author gives a list of nineteen birds which have very sensibly decreased in numbers; among which are the red backed shrike, which Mr. Clarke says is now "exceedingly rare" and the land rail which is "virtually extinct in the neighbourhood." Among other facts, mention is made of the destruction of the eggs of the black backed gull, 12,000 of which are sent every season as "plovers eggs" to London from Scoulton Mere, fourteen miles from Thetford. Messrs. E. H. Blackmore and J. Robertson also contribute some interesting pieces of information, the latter giving a list of sixty-eight birds which have shown a marked diminution in numbers in Forfarshire, Fifeshire and Eastern Perthshire.

LAMBETH FIELD CLUB.—At the meeting held on May 7th a lecture on "The Animal Kingdom" was delivered by Mr. H. C. Richter, who is now well known for his artistically executed coloured diagrams, minutely exact and obviously the outcome of a very large amount of patient labour. Mr. Richter commenced with an account of the progress made in zoological science from the earliest times, recognising in Aristotle the first rational attempt at classification made by man. Cuvier divided the animal kingdom into four great classes, namely, Vertebrata, Invertebrata, Articulata and Radiata. The lecturer showed diagrammatically how the mammalian class, to which man belonged, had, in addition, to a respiratory, circulatory and (sympathetic) nervous system, all of which were possessed by Invertebrates, a backbone and a special nervous system, connected with it, and the brain, called the cerebro spinal system. The mouth in Vertebrates opened on the "haemal surface of the body, or that in which the chief circulatory organs were located, while in invertebrates it opened on the "neural" side, or that to which the chief nerves belonged, and they had no skeleton unless it was an external one. The vertebrata had a symmetrical nervous system, the invertebrata an unsymmetrical one the articulata and radiata again symmetrical nerves, which in the last division were disposed in rays from a centre. The lecturer next showed how certain features of the skull distinguished mammals from birds, also the possession of true hairs, the secretion of milk, and other characters. Birds were closely allied to reptiles, and amphibia to fishes, while the latter also approached mammals in having two condyles to the skull. The lowest fish, the lancelet, was also the lowest vertebrate animal. The various divisions of the mollusca were next considered, the highest, that of the cuttle-fishes, coming nearest to vertebrates in structure. In describing the polyzoa, a very beautiful drawing of a freshwater species, *plumatella*, was shown, followed by an equally good one of a "water bear," a curious creeping creature belonging to the Arachnida. Special attention was given to the wonderfully constructed shells of the Radiolaria and the Foraminifera, formed as they are from animals which seem to be mere

lumps of protoplasm. The lines of development in the various classes of animals were next considered. It was found that, when a certain point had been reached in the increasing complexity of animal structure, an attempt at an over development led to a return to a simple organisation. Thus when we arrived at the octopus, the most highly organised invertebrate, we could not proceed at once in the upward scale to the first manifestation of the backbone ; but we were forced, in order to discover this, to take a most simple creature, the lancelet (*Amphioxus lanceolatus*), a little fish that, while it gave us the first true sign of a vertebral column, was yet, in other respects, far below the cuttle-fish in its structure. The highest vertebrate was the gorilla,—for the lecturer, while recognising man's position in this class, regarded him as a being quite separate from the lower animals by reason of his mental and moral faculties. He finally added some remarks on the effects of the study of natural history on the mind, which were, contrary to a generally received opinion, most beneficial, showing us, as they did, our ignorance and our smallness in the vast universe that surrounded us. Previous to the lecture, Mr. F. Slade showed some living specimens of the edible snail (*Helix pomatia*) from Caterham.—F. P. PERKS, 41, St. Martin's Lane, Charing Cross, w. c.

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The 20th biennial meeting was held on May 9th, Mr. J. Potter presiding. Messrs. Jones, Stewart, Elton, Walker and Wensley were elected members and Mr. Hithersay an associate. Exhibits :—Mr. Poore ; land and freshwater shells (including some rare and local specimens), bird's eggs and larvae Mr. Potter ; living specimens of *S. maculosa*. Mr. Cooper ; some very nicely mounted blossoms of Scotch fir, willow and wood sorrel, showing the ♂ and ♀ bloom ; also marine shells. Mr. Albuary ; a series of *L. argiolus* and other lepidoptera. Mr. S. Pine, slow worms (*A. fragilis*), land and freshwater shells. Mr. Old ; pupar cases and imagines of *L. depressa*. Mr. J. Wilson ; larvae of *B. quercus*, *L. quercifolia* and *G. papilionaria*. Mr. E. Knight ; a richly marked variety of *P. meticulosa*. Messrs. Wand and H. Broughton various lepidoptera. The following were elected officers for the ensuing six months :—President, Mr. J. Potter, Vice President, Mr. E. Dennis Treasurer Mr. A. S. Poore, Secretary Mr. H. J. Webb, Assistant Secretary Mr. J. H. Broughton. Committee, Messrs. H. Albuary, W. Broughton, A. Old, S. Pine, E. Knight and J. Woodward. Auditors, H. Albuary and W. Broughton. Afterwards Mr. A. S. Poore gave the first of a series of object lessons in Natural History, the subject selected being “drilling and blowing birds' eggs” apparently a very simple matter but, as Mr. Poore remarked before commencing his lesson, many specimens were ruined in all branches through young collectors being ignorant of the way to proceed, and he thought it would be beneficial to the younger and less experienced members to have the proper mode of preserving, mounting and setting the various specimens exhibited to them as object lessons from time to time. Blackbird's, chaffinch's, and other eggs were then side blown by Mr. Poore.

HASTINGS AND ST. LEONARDS NATURAL HISTORY SOCIETY.—About 30 members of this society, left Hastings station, on the afternoon of Wednesday, April 18th, for Bexhill, in order to visit some woods about two and a half miles distant from that place. The weather was all that could be desired, and after a pleasant afternoon spent in the woods and fields, the party returned to Hastings, shortly after seven o'clock. The most notable capture was a male specimen of the pine saw fly (*Lophyrus pini*), taken by Mr. Bennett. Over 60 members were present at the meeting, held on Thursday, April 19th. Mr. T. H. Cole, in the chair. A most interesting and instructive paper, was read by the honorary secretary, Mr. E. Connold, on “British social wasps and the habitations they construct.” The species comprised under this title, are seven, namely :—*Vespa crabro*, *V. britannica*, *V. sylvestris*, *V. arborea*, *V. germanica*, *V. vulgaris*, *V. rufa*. The paper was profusely illustrated by specimens, nests,

diagrams, and photographs, exhibited by means of the lantern, showing the nests both in situ and in section and illustrating the principal points in the external anatomy of the insects. The lantern slides were shown by Mr. Connold, senior. Among the nests shown, were two of *V. sylvestris*, which is described as making its nests in trees; one of these was built among bracken, in Beauport park, and the other was dug out of a bank in St. Helen's wood. The paper was followed by a discussion in which several members took part. There was a very good attendance at the meeting, held on Thursday, May 3rd. Mr. H. Cheshire, F.C.S., in the chair. A paper was read by Miss Groom, on "Our spring wild flowers," illustrated by both fresh and dried specimens, and by diagrams. A few remarks were made by the chairman and others, at the close of the paper, and the proceedings closed with a vote of thanks to the lecturer—L. A. CURTIS EDWARDS.

RECORDS AND OBSERVATIONS.

MAMMALS.

A canine monster.—A naturalist friend of mine, showed me a very curious monster, viz., a pup, with eight legs, two heads, and two tails. Four legs were growing in the proper position, the other four were growing out of the animal's back. The heads were joined, and back to back. The thing only lived a few hours after birth.—ROBERT F. McCONNELL, Thistlebank, Dumbarton, May 3rd, 1894.

BIRDS.

The Hawfinch in Epping Forest.—During last month (April), I made several visits to Epping Forest, and saw haw-finches on many occasions. There is no doubt, but what the bird is on the increase here, and more common than is generally supposed. They are very shy, and keep at the top of the high trees a good deal, and must be quietly looked for to be observed. That distinguished naturalist of the old school, the late Henry Doubleday (who took such a great interest in the ornithology of Epping Forest), first drew attention to the fact of the bird being pretty common in this district. This was about fifty years ago. In severe winters, they are about in large flocks, their favourite food seems to be the seed of the hornbeam, they also eat the kernels of haws, plum and cherry stones, etc., crushing the stones easily in their strong beaks. During summer time, havoc is played by them amongst the peas. The call note, is a long whistle, repeated four times. They pair during the end of April, nesting in May, the nest (a rather careless structure), containing from four to six eggs. A. F. GATES, Stratford, Essex, May 5th, 1894.

Notes from Cambridge.—April 7th, Saw first swallow; 8th, Heard and saw first cuckoo; 25th, Heard first nightingale at 10 p.m.—E. PORTER, M.P.N.S., Trinity College, Cambridge.

March 15th, Chiffchaff first seen. April 3rd, Blackcap first seen; Yellow wagtail first seen; April 16th, Redstart and garden warbler first seen; April 17th, Sedge warbler first seen.—A. H. WATERS, Cambridge.

Spotless Chaffinch's eggs.—Within the last fortnight, I have seen three clutches of chaffinch's eggs, all of which were blue, with the exception of a few minute spots on four or five of them. I thought this would perhaps be of interest to some of your readers, as I have never met with a blue variety of this egg before.—ROBERT S. SMITH, Junior, Hythe House, Downham.

Variety of Sparrow.—It may interest our readers to know that, on May 3rd, 1894, while going over Tulse Hill, I saw a number of sparrows, one of which

was a variety, its back being white, whilst its head and tail, were of a dirty grey.—W. NICHOLSON, Junior, Lambert Polytechnic.

A winter ramble in Yorkshire.—Whilst walking on the high road, between Cliff and Skipwith Common, on the morning of the eighth of January, 1894, about 10 a.m., I noticed a male goldfinch (*C. elegans*) in splendid plumage, busily flitting along from one thistle stem to another. The ground at the time was thickly covered with snow. It frequently allowed me to approach within three or four yards of it and, despite the severity of the morning, I took advantage of this familiarity, to observe its sprightly movements for some twenty minutes. Although I have been a close observer of nature in very many districts in Yorkshire, and especially in the neighbourhood of York for the past twenty years, this was the first occasion I had had of seeing *C. elegans* in a state of nature. The other birds of interest noticed, during my walk, were two males and one female, bullfinch (*P. europea*) a large flock of wild ducks (*Anas boscvs*), a small party of cole tits (*Parus ater*) and several flocks of fieldfares (*T. pilaris*).—WILLIAM HEWETT, Howard Street, York.

Curious Duck's egg.—Some time ago, I had a very strange egg given to me. It was laid by a pure white tame duck. At the top it is of a dull greyish green, and about the middle there is a thick belt of very dark green—almost black—gradually paling towards the base where it again darkens abruptly. I should like to know if any of your readers have ever observed a similar case.—E. B. LLOYD, Finsbury Park, n.

Oological notes from Ludlow.—I found a long tailed tit's (*Acredula rosea*), nest, with four eggs in it, on April 16, and I had four pheasant's eggs brought me on the 17th, which I think is rather early for them. On the 20th, I found another long-tailed tit's, with ten eggs in. A friend of mine, was out nesting, on the 5th inst, and he came across a blackbird's nest, with six eggs in, five of which were of the normal type and markings, but the other one, was exceedingly small, it being no larger than a chiffchaff's egg. It is perfectly round, and has very similar markings to the other ones found in the nest. Upon being blown, it was found that there was no yolk in it. I have never seen one so small before, and I should like to know if any other reader of the *Naturalist's Journal*, has seen or heard of a similar egg. What is the cause of its being so small? Is it due to the bird being nearly exhausted and not enough calcareous matter left, to form an egg of the typical size? A cousin of mine, went out collecting yesterday, and found a goldfinch's (*Carduelis elegans*'s) nest, with five in, a cole tit's (*Parus britannicus*), with four, and a missel thrush's (*Turdus viscivorus*), with four. The first and last are very rare about here.

FISH.

Glycera alba with two tails.—A specimen of rock-bait with two tails, was exhibited at the February meeting of the Guernsey Natural Science Society and presented to the museum by Mr. Gasnier.

The Herring and Herring Fisheries.—A very interesting paper upon the herring and the herring fisheries was read at the January meeting of the Great Yarmouth Naturalist's Society, the report of which reached us too late for insertion. Mr. Hotblack, the author, began with an account of the fishing season at Stornoway, and working along the coast, he came at last to the neighbourhood of our own port, from which he took his audience right away to the far south. He pointed to the difference in the character of the fish in various localities, and expressed an opinion that the delicious "longshores," like the wild duck and other denizens of the Norfolk and Suffolk marshes, really belonged to the home waters, and had little or no connection with the

great visiting shoals. He believed the herring shoals consisted of distinct fish in each locality and were migratory, travelling long distances, and returning each year to the place of their birth, like the salmon and the swallow. In that opinion he had the support of Couch. He attributed the early appearance of herring off the West Hebrides to the influence of the gulf stream; and that those which were taken off Norfolk came to spawn. He considered the whole of the shallow water in the North Sea was one immense spawning ground. In proof of this he cited the fact that cod and haddock taken in the vicinity of the Dogger Bank and the Silver Pits, were discovered at certain times to be full of spawn. The food of the herring consisted largely of minute crustaceans, with which the fish had been found gorged. Mr. Hotblack proceeded to deal with the herrings frequenting the coasts of north-east America, Norway, and Denmark; and said it appeared that those along the southern shores of England came from the north, not round the Land's end. They met the pilchard, but usually went no further. Having touched on the herrings of North-west America, the Black Sea, the Caspian, and the vicinity of the Cape of Good Hope, Mr. Hotblack concluded with a reference to the large quantities of pilchards captured near Yarmouth some years ago. Mr. Patterson offered remarks on the paper, pointing to the dorsal fin as the feature distinguishing the herring from the pilchard, and expressed the belief that the former spawned at an early age and the pilchard spawned in deep waters. Mr. Stacy Watson, whose *Silvery Hosts of the North Sea* is a popular book on the herring, gave a comprehensive paper, in which he remarked that it was true at the present time as of old that "of all the fish, herring is king." Compared with beef, the balance was immensely in favour of this fish, as it was calculated that one last of the herrings was equal to at least nine bullocks. Though the fishery had existed for centuries, the positive information about the herring was still very meagre. Mr. Stacy Watson had, however, much to tell of its many varieties, pointing to the characteristics of those caught off Alaska, the east coast of the United States, Newfoundland, the river Niagara, Iceland, Norway, the White Sea, Sweden, Denmark, the Baltic, the Hebrides, Ireland, Scotland and the coasts of Yorkshire and Norfolk. Both the quantity and quality of the fish were he stated, affected by their food and surroundings. Having quoted Sir Henry Spelman's remarks on the importance of the herring fishing Mr. Stacy Watson went on to consider whether the spring herring, which put in an appearance about March, were a distinct kind. He concluded they were young fish which afterwards disappeared into deep waters. He touched on the now comparative scarcity of the celebrated black nosed herring, long plentiful at Yarmouth, and on the merits of the incomparable "longshore," bestowing on the latter the high eulogy that without a taste of it when it was in season life was deprived of one half its pleasures. He was confident herring were local fish, that they visited the deep parts of the North Sea to spawn, and that having grown strong, they returned to their own haunts, where they appeared periodically. Mr. Hotblack commented in complimentary terms on Mr. Stacy Watson's paper, and opined that herring came from deep waters very far off. The president suggested that mid-summer herring should be left until the autumn to develop. Mr. Stacy Watson thought the mid-summer and autumn fish were distinct.

INSECTS.

Amara fulva at Fivehead Gloucestershire.—In the month of April I captured *Amara fulva* in the locality of Fivehead; also *Gyrinus natator* and *Dyticus marginalis*.—REV. A. C. DENMAN M.P.N.S. Fivehead, Somerset.

Lepidoptera in April.—On April 13th I found at Fivehead *Macroglossa stellatarum* and took the larvæ of *Odonestis potatoria*.—REV. A. C. DENMAN.

Lycæna argiolus at Gravesend.—On April 26th while out on an entomological expedition with a friend at Purfleet we took six specimens of *Lycæna*,

Argiolus. Is it not a very early occurrence? [Not very.—Ed.] Can any of your readers give me any information as to the collection and preservation of larvæ, also as to the breeding of them.—S. E. ALLINGHAM, 84 New Road, Gravesend. [We shall very shortly give an article on the breeding of larvæ.—Ed.]

Notes on Lepidoptera in Spring of 1894.—My first evening in search of Hybernidae was on January 25. Mild, damp evening, took several, male *rupicapraria*.

Feb. 12. Cool and blustering. Several ♂ *rupicapraria* and *progemmaria*. Latter good types mostly about five feet from the ground; frost later.

Feb. 19. Saw first ♂ *A. aescularia*.

Feb. 26. Mild and dull; took ♂ *A. aescularia* on paling.

Feb. 27. Obtained ♀ *P. meticulosa* which laid freely.

Feb. 28. Several ♂ *H. rupicapraria* and *progemmaria*.

March 2nd. Eggs of *meticulosa* changed from white to dull pinkish.

March 7th. Eggs of *meticulosa* hatched; obtained in evening, besides *aescularia* and *progemmaria*, *T. stabilis* at light.

March 9th. Larvae of *meticulosa* loop in progression; varied colours, tendency to dark green; tried with several plants; preferred pimpinell foliage.

March 14th. First moult of *meticulosa* larvæ; saw good var. of *leucophearia*.

March 19th. *C. fagella* on tree trunks in morning, got one dark var.

March 21st. Saw first *G. rhamni*, cold wind, bright sun.

March 22nd. Saw *V. urticæ* on sallow, *C. fagella* on tree trunks.

March 23rd. Mild evening, *X. rhizolitha* on paling.

March 26th. Took on "Darwin's Barberry yellow blossom," *T. gothica*, *S. satellitia* and *A. badiata*.

March 27th. Mild evening, got at blossom about 8 p.m. *L. polycommata*, *C. miata*, *T. gothica*, *lithorhiza* and *pterodactylus*. Also *B. repandata* larva.

March 31st. Saw first *P. brassicæ*, in even; got *libatrix* and *illunaria*; larvae of *meticulosa* moulted for second time.

April 2nd. Caught first ♂ *A. cardamines* in even, fine *progemmaria*, *A. badiata* and *T. gothica*.

April 3rd. Got, *T. gothica*, *C. suffumata* and *pterodactylus*; also *C. unidentaria*.

April 7th. Saw *Badiata*, *derivata* and *aescularia*.

April 10th. Saw *Cardamines*, *M. stellatarum*, *G. rhamni*. Larvæ of *meticulosa* began to hide by day.

April 11th. Obtained *M. fluctuata*, *A. polydactyla* *T. instabilis*, *E. satyrata*: larvæ of *meticulosa*, which had hitherto rested curled up, now rest in straight line.

April 13th. At light, *S. dubitata*, *C. suffumata*.

April 14th. Larvæ of *meticulosa* changed to brown.

April 21st. Saw first *A. caja* and *O. potatoria* larvæ; also first *S. megæra* out.

April 25th Obtained several larvæ of *T. orbona*, *N. xanthographa*, *triangulum* and *B. repandata*, also *brumata* larvæ.—E. H. PORTER, Trinity College, Cambridge.

Spring lepidoptera at Hastings.—The present season is without doubt an early one, like last, as regards show. Since February 24, when I began working the fences I have taken *H. leucophearia* (♂ common, only one ♀), *X. lithoriza* (very common), *P. pedaria*, *H. progemmaria*, *A. aescularia*, *D. fagella*, *T. hyemana*, *T. stabilis* (1) and one *T. cruda* on a water butt, *B. quercus* larvæ (2). I only visited the sallows on one or two occasions and then *T. stabilis* and *cruda* simply swarmed. I also took *T. munda*, *rubricosa*, and *instabilis* in addition to *S. satellitia*. Probably if I had worked them more I should have added several to this list but owing to the exceptional weather they were quickly spoiled. I sugared on three occasions for *C. flavidornis* but without

success. I took one flying at dusk and saw two others. Among the *diurni*, I have taken very few, only *S. algiria*, *G. rhamni*, *P. napi*, *A. cardamines*, *L. argiolus*. I have bred *O. pudibunda* from larvæ collected in the hop fields in 1893. The first emerged on March 17, being just fourteen days later than last year.—H. W. FORD-LINDSAY, Hastings, April 18, 1894.

Vanessa C-album, at Ludlow.—I saw two specimens of this beautiful butterfly on March 18th. They were flying along the road-side, a little way out of the town, and were in splendid condition, retaining nearly all their pristine beauty. My entomological ardour was at once fired and I immediately gave chase, my "bowler" doing duty for a net for the time being, by a little circuitous manœuvring, I managed to get on the "blind" side of the one, I made a quick, bold stroke and secured—a leaf, while *C-album* sailed gracefully over the hedge. This is my first date for butterflies this year, although last year I noticed *N. atlantica* on March 10th but did not see *V. C-album* until March 30th. I may add that the day was beautifully fine, the sun shining quite strong in the morning. I have never seen hibernated specimens in a better condition, they having evidently "wintered well." I also saw a wasp (*Vespa vulgaris*) on the 15th, and I had another brought me on the 17th.

N. lucina.—A gentleman from London, was down here last week, who is an ardent entomologist, he only had one good sunny day, but on that day, he managed to capture *Vanessa C-album*, *Nemeobius lucina*, *Lycæna argiolus*, *Hesperia alveolus*, *Argynnis euphrosyne*, *Anthocaris cardamines*, *Pieris rapæ*, *P. napi* and *Vanessa, Io*, the last would be an hibernated specimen. This is the first time to my knowledge that *N. lucina* has occurred here and the same remark applies to *L. argiolus*. I have never caught either myself nor have I seen them before in this district, but the first opportunity that I have, I will try and secure same. I had a splendid specimen of the buff-tip moth (*Pygara bucephala*) come out in my breeding cage.—E. H. BLACKMORE, M.P.N.S., 13, Bull Ring, Ludlow, May 10, 1894.

Dactylopius citri.—At the February meeting of the Guernsey Natural Science Society a female specimen of this coccid was exhibited by Mr. Luff who had found it upon an orange and sent to England for identification. It was in a perfectly lively condition having survived the perils of packing and transit, thus showing how insect pests may be spread from one country to another.

ZOO PHYTES.

Sense of taste in Zoophytes.—An *Actinia mesembryanthemum* which has been living in one of my aquaria for nearly eighteen years is very particular about its food and will eat nothing but scraped beef, rejecting at once, after touching it with its tentacles, mutton or any other kind of flesh meat, and even fish.—A. H. WATERS.

PLANTS.

Early Flowers.—In April I saw the following in flower *Orchis maculata*, *cardamine pratensis*, *Vicia sativa*, *Cornus sanguinea* *Geranium lucidum*, *Galeobdolon luteum*, *Ranunculus acris*, and *Crataegus oxyacantha*.—REV. A. C. DENMAN Fivehead, Taunton Somerset. [Our correspondent should have given us the exact dates.—ED.]

The Rev. Dr. Heurtley (Margaret Professor of Divinity, Oxford), describes a remarkable instance of vitality in seeds. Several years ago he made a garden for a new house built in a field whose soil had remained undisturbed, probably for centuries. Though not a single cowslip had appeared in the field previously, when spring came, cowslips sprang up on all sides in the garden and continued to do so for several years.—*English Churchman*.

RURAL NOTES AND OBSERVATIONS.

Royston, Cambs, April 17: House sparrows beginning to lay. Skylarks laying. Hawthorn coming into blossom. 20th: Partridges commencing to lay. This is two days earlier than 1893. 27th: Turtle dove (*Turtur communis*) and white-throat (*Sylvia cinerea*) arrived. 29th: Bees swarming. I have never known or heard of bees swarming here in April before. May 3rd: Mock sun this afternoon. Some cold weather may be expected. Landrails (*Crex pratinensis*), first heard. 6th: The swifts (*Cypselus apus*), first seen. All the spring birds have now arrived except the red-backed shrike (*Lanius collurio*). 9th: Some eggs of the landrail are reported to have been found in this locality. 13th: The first orange tip (*Anthocharis Cardamines*) seen to-day. 15th: Young sparrows leaving the nest.—RAMBLER.

Oological Notes from Stravithie, Fifeshire.—The season for nest building is now far advanced among our inland species of birds; although it is rather early to find the eggs of the *Anatidæ Laridæ*, etc. The following is a list of most of the nests observed in this district—all of which contained eggs. April 4th, found nests of black bird, long eared owl, wood pigeon, and dipper. 14th, magpie. 12th, tawny owl chaffinch, pied wagtail (in a tree stump), reed warbler, and curlew (6 eggs). 22nd, wild duck, yellow-hammer, song thrush, moorhen, sheld duck (one egg was found on Tentsmoor but no nest), wren, green finch, and carrion crow. Noticed a large flock of fieldfares feeding on grass parks (April 23rd), probably congregating previous to migrating to their northern breeding grounds, found an egg on the ground which one of these birds must have dropped. 26th, moorhen, dipper, house sparrow, starling, carrion crow, hedge accentor, and pheasant. I have golden, silver, and common pheasants in captivity, and they commenced laying about April 1st. 27th, found nests of mistle thrush, jackdaw, and lapwing. The last named bird is not nearly so numerous in this district as it used to be, the nest was somewhat unusual; as it was composed of grass and weeds loosely put together. On the same date, found also nest of the dabchick, among reeds in the Eden; the bird had covered the eggs over, apparently to give it the appearance of an old one. May 2nd, coot, carrion crows (3), starling and dipper. When the dipper's nest was approached, the old birds flew away some distance, but soon returned, and perched near their nest on a tree. I have frequently seen moorhens sitting on a tree, but never before observed dippers do so. The nest of the dipper is very often met with on the banks of the Kenly: one was found in a very uncommon position, viz. on a ledge under a waterfall, so placed, that the dippers had to fly through the falling water, every time they went to and came from the nest—WM. BERWICK, M.P.N.S., Stravithie, May 10th, 1894.

HINTS FOR THE MONTH.

ORNITHOLOGY.

Most birds have by this time made their nests (some for the second time), and are rearing their young, but the spotted fly catcher, sand martin, red backed shrike and the terns usually nest in June.

COLEOPTERA.

The coleopterist should be on the look out for the various *Umbelliferous* plants, so common in weedy lanes, woods, etc.; many beetles may be found on the blossoms, including several species of *Longicornia*. The sweep-net will be indispensable this month; the best time for sweeping is the evening, from an hour or two before sunset until dusk, many beetles are only found at this time, such as the *Anisotomidae*, *Colons*, etc., small and inconspicuous insects but many of which are of considerable rarity. This will be found the best month for the "carrion" beetles and if the collector will take the trouble to hang up a few dead birds or small animals, in a wood and leave them for a few days; he will

(or ought to) be satisfied with the result ; they can be beaten over a newspaper ; all the *Necrophori*, *Silphas*, *Histers*, etc., may be obtained in this way.—A. FORD.

LEPIDOPTERA.

June is the month for butterflies and it is impossible to find space for a list of all the species which are out now ; we are forced to content ourselves with mention of *Melitea Cinxia* and *Athalia*, *Argynnis Euphydryas*, and *Selene*, the northern moor-loving *Laidion* variety of *Cænonympha Typhon* or *Davus* as Stainton and Newman call it, *Erebia epiphron*, var. *Cassiope*, *Lycana minima* or *alsus* and the Scotch *Artaxerxes* var. of *L. agestis*. Look out for *Stauropus fagi* on the trunks of beech trees, and for *P. palpina* on poplars, also for *N. dromedarius* on birch trees, whereon also may sometimes be found the brownish-red *N. camelina* as well as on palings in the vicinity. Sugar for the brown, pink-spotted *Thyatira batis*, the brown banded *Cymatophora fluctuosa*, the dull grey *C. or*, and the numerous other moths which may be attracted by the sweet mixture. Visit reed beds for *Leucania oboleta* and *straminea*. Amongst the other moths occurring in June are *Procris globulariae* which flies about the Sussex downs, *Zygæna trifolii* *Deilephila euphorbiae*, *D. elpenor*, *Sesia myopæformis*, *Calimorpha dominula*, the fern loving *Euthemonia russula*, *Chelonia villica*, *Lasiocampa quercifolia*, *Angerona prunaria*, *Eurymene dolobraria*, the whitish grey *sublunaria* variety of *Selenia lunaria*, the blood vein moth (*Bradypterus amataria*), the peacock moth (*Macaria notata*), the heather loving *Scodonia belgia*, *Scoria dealbata*, *Lobophora hexapterata* *Anticlea sinuata*, *Phibalapteryx vitalbata*, *Laphyrgma exigua*, *Acronycta aceris*, (to be looked for at rest on sycamore trunks) all the wainscot moths (*Leucania*), except *strigosa*, *Dianthecia nana* (which we used to call *conspersa*) *Hadena pisi* *Anarta myrtilla* and *Plusia pulchrina* (which is called now *V-aureum*).

Larvæ for June.—On oak. *C. diluta*, *A. aprilina*, *H. protea*, *C. sponsa*. Oak and birch, *E. tiliaria* (brown, twig-like). *E. erosaria* (grey), *E. angularia* (grey, clouded with reddish-brown). Willow, *C. nupta* (hides by the day in the crevices of the bark, the best way to find it, is to draw the fingers down the crevice, when the soft larva may be readily felt). Sallow, *V. polychloros* (and elm), *T. opima*, *B. notha*. Honeysuckle, *H. sativa*. Hawthorn, *T. crataegi*, *E. lanestris*, *B. neustria*, *D. cæruleocephala*. Heather, *F. atomaria*. Low plants, *X. flavago*, *A. tragopogonis*. Broom and clover, *T. gothica* (also on lilac.) Mouse ear (*Cerastium arvense*), *H. arbuti*, with many others.

NOTICES OF BOOKS.

The new edition of J. Hubner's *Exotic Butterflies* which, W. F. Kirby F.E.S. of the entomological section of the British museum is editing will form when completed one of the most beautiful books upon the subject of foreign rhopalocera. It will contain 664 hand coloured plates, each well coloured and engraved. The first three parts have already appeared and contain thirty plates.

In the *Entomologists' Record* for May 15, Mr. Tutt continues his life history of a lepidopterous insect, giving an exhaustive account of the ovum or egg, Mr. Prout endeavours to solve the difficulties surrounding *Coremia ferrugaria* Haw and *C. Unidentaria*, Haw. Mr. Tutt, again, gives us some most interesting notes on the past of English lepidopterology from which we observe that *gamma* was reckoned a rare moth about a century ago as likewise was *defoliaria*! Mr. Hodges graphically describes a night moth in the lens and has something to say about the extinction of *Lælia cænosa*, and *N. subrosea* and the increasing scarcity of *Cidaria sagittata* and *Porthesia chrysorrhœa*. Finally Dr. Chapman continues his series of papers upon the larva of *Arctia caja*, beautifully illustrated with figures of varieties. We have ourselves been experimenting upon *Caja* larvæ for years past and quite agree with the doctor

that there are three (if not four) distinct types; moreover we believe we have observed in these a distinct preference for particular food, some preferring dead nettles, others docks, some mint, and a very fine specimen we reared last year subsisted chiefly upon lettuce.

In the *Naturalist* it is asserted that *Xanthia aurago*, whose occurrence in south Yorkshire we chronicled last month, is not looked upon as a rarity by the old collectors in that district.

The *Natural History Journal and School Reporter* for April contains a very interesting list of the "game birds" of the N.W. corner of Bedfordshire.

Professor T. D. A. Cockerell, once a prominent member of the "Practical Naturalist's Society," describes a new chrysis (*Chrysis mesillæ*) from New Mexico in the American *Entomological News*.

The *Canadian Entomologist* contains descriptions of some New North American Homoptera as well as several articles interesting to lepidopterists.

We have also received the *Collector's Monthly*, the *Sussex and Hants Naturalist* and the *Western Gazette*.

EDITORIAL NOTES.

We are making such arrangements for the new volume which we commence next month that we confidently anticipate a large accession to our subscription list. Our magazine will be emphatically THE Journal for ornithologists and oologists and the interesting and valuable notes and articles we hope to publish will make it most useful to all lovers of bird life, especially to students of variation in plumage and in the colouring of the eggs of the feathered tribes and we invite all ornithologists and oologists to send us any instances they may observe. At the same time we assure entomologists that the Journal will continue to be, as in the past, largely devoted to their interests also. The two editors are both such ardent entomologists that there need be no fear but that a large portion of each number in the coming volume will be devoted to lepidoptera, coleoptera, as well as the more neglected orders. Among the useful papers we shall publish will be some on "Rearing Larvae from Ova" and we shall continue the series on "Some varieties of British lepidoptera," the illustrations, which we shall entrust in future to a first-class London engraver, a specialist in entomological illustration, for we are determined to spare no expense in the matter of our engravings and are resolved to have them good and accurate in future, whatever the cost.

The index etc. to Vol. II. takes up so much of our space that we have not room to enter into fuller details of our plans for the new volume nor to give a list of the well known entomologists who have promised us contributions and which includes Dr. Knaggs, F.L.S., Ven. Archdeacon Hey, M.A., Rev. Theodore Wood, F.E.S., H. J. Turner, F.E.S., J. W. Tutt, F.E.S., J. S. Robson, F.E.S., B. Tomlin, B.A., W. Harcourt, Bath, etc.

Articles will also appear by well known writers on botany, conchology, and geology so that the students of these sciences may rest assured a portion of our space will be devoted to them.

We also hope to publish some articles on "Vivaria and how to manage them" including hints in marine and fresh water aquarie.

But in order to enable us to carry out all our plans we must have an increased number of pages and the extra cost must be defrayed by, at least the quadrupling, of the number of our subscribers. We shall feel under great obligations to our readers if they will introduce the paper to their friends and each one endeavour to get us FOUR new subscribers at the lowest and we will with pleasure forward a few circulars to any one who will kindly distribute them for us.

* * * * *

He was a lucky young man who bought those two great auk's eggs at a sale

in the south of England "with a lot of shells and fossils" for thirty-six shillings and then sold them for £456! If he be a reader of the *Naturalist's Journal* we beg to tender him our congratulations.

That ride home on a bicycle carrying the precious parcel of eggs, shells, and fossils was an athletic feat to be remembered. We shudder to think of the consequences to the "most magnificent egg in existence" if——!

TO CORRESPONDENTS.

TO CONTRIBUTORS.—We receive such a large number of manuscripts from all parts that we should advise our friends to let us have their articles as *early in the month* as possible. Although notes *may* be sent up to the 15th., the insertion of longer articles cannot be guaranteed for the following month if received later than the 8th or 10th and notes and observations unless *very* important may be "crowded out" if sent later.

A. M. Jeffery.—We will adopt your suggestion and "Hints as to forming collections" shall appear in due course. We have already had articles on taxidermy; See no. 2, p. 21, 1½d. post free. Our "Hints for the Month" is written for boys like yourself and you will, we trust, find them very helpful to you.

R. B. (Plymouth).—You mean, we suppose, *Anosia plexippus*, which American butterfly has occurred on several occasions in England during the last quarter of a century and is believed to have bred here. The allied species *Danais chrysippus* has also occurred here.—A. H. W.

C. H. P.—The *Naturalist's Journal* is not the exclusive property of the P. N. S. and the exchange page is open to all subscribers. The Society already has commenced to issue an Occasional Paper which will probably develop into a sort of "Journal of Transactions," in which case the *N.J.* will cease to be the official organ but we shall continue to take a friendly interest in this very useful society, and members will have the magazine at the same price as now even if at any time we issue supplements or double numbers.

W. W. Esam.—List of captures received, but it is too long to get in this month. Will insert next.

A. J. Jenvey.—The drawing of the duck's egg you send interests us greatly and we shall be glad if we are able to reproduce it in the *N. J.*

T. E.—Box of shells received safely. Have sent you the names by post. We shall have some articles interesting to geologists.

F. Fox.—Next month. Congratulate you.

* * * Several manuscripts have reached us too late for insertion.

END OF VOLUME II.

15 AUG. 94



EXCHANGES.

Specimens for Exchange and Wanted (not For Sale) are advertised in this column free, but no advertisement must exceed 40 words. If beyond that limit a penny stamp must be enclosed for each additional four words.

I AM starting, with a friend to collect butterflies, beetles, etc.: Will some young naturalists in different parts, also commencing, communicate, and arrange to exchange specimens, found in different localities. Enclose stamped envelope for particulars.—Robert F. McConnell, Thistlebank, Dumbarton.

DUPLICATES—*Cicindela campestris, Anchomenus thoreyi, Bembidium Mannerheimii, Stenolophus exiguus, (var. luridus), Blechrus maurus, Philonthus varius, Hydrocoris inaequalis, H. melanocephalus, Laccophilus hyalinus, Helocharis lividus, Omosita discoidea, Stroposomus retusus, S. coryli, Trachyphloeus scabriculus, Hypera nigrirostris. Desiderata, British Coleoptera.*—G. D. Turner, The Grampians, St. Helens Road, Hastings.

WANTED.—*Yarrell's "British Birds."* Will exchange “The National Encyclopaedia” 13 vols, excellent binding; no leaves out.—Edward J. Penberthy, Illogan Ch. Town Redruth, Cornwall.

FOR Exchange.—Full sized umbrella net, and one small ditto. Also 4-jointed sweeping net, ring and handle. Desiderata: Insects, larvæ or pupæ.—T. M. M'Gregor, The Mills, Horse Cross, Perth, N. B.

FOR Exchange.—*The Scottish Geographical Magazine.* Contains interesting articles by well known writers and explorers, with splendid maps and charts, with each number, unbound.—Also *Journal of the Society of Arts* unbound.—S. Varville Henderson, M.P.N.S. 66, Dundonald Road, Kilmarnock, N.B.

OFFERED.—*H. hortensis, vars. albina, lutea, lilacina, and arenicola. H. nemoralis, vars. rubella, carnea, C. rolphii, C. laminata, By. leachii, L. glabra, Hy. jenkinsi, type and var. cristata.* Wanted—*H. obvoluta, L. burnetti, T. haliotidea, T. seutulum, T. maugei, H. pura, C. bisplicator.*—Arthur S. Poore, Seivour Cottage, Abbey Road, Belvedere, Kent.

WANTED.—*Cassell's Natural History* (parts), vols. 5, 6, also European butterflies and moths, 43 to 61; exchange, flying fish, viperous lizards, (alive); Spink's Coin Journal, complete, 1893, etc., lists exchanged.—Clifton, 38, Brighton Terrace, Brixton, London.

WANTED.—John's, or other books (illustrated), on wild flowers, will exchange bound vols. of Boys' Own Paper, also vol. ix. Cassell's Saturday Journal, or Farm, Field, & Fireside for 1890, bound.—W. Ashbee, Barham, Canterbury.

BIRDS' EGGS, small collection of. Brown's Taxidermy; Bailey's Sporting Magazine, vols. 18, 19; stuffed birds, rhea egg, etc., exchange wanted, any following odd parts, complete, Cassell's Canary & Cage Birds; Familiar Wild Birds; and Strand Magazine, 1891.—Davis, 33, Brighton Terrace, Brixton.

EGGS of red-breasted merganser, common scoter, long tailed do., Barrows' golden eye, golden eye, scaup and harlequin ducks, bean legged goose, hooper swan. Desiderata: smaller birds' eggs and lepidoptera.—J. Cummins, Eagle Works, Bishop Auckland.

D. UNGUICULATA (hook-tip,) fine series of. Desiderata: any local species or varieties with ova.—E. Porter, Trinity College, Cambridge..

NYSSIA zonaria and larvae. Desiderata: ova, larvæ or pupa of *M. stellatarum* and *S. carpini*.—J. Rushton, Thornbank Gilnow, Bolton.

WANTED.—Living reptiles (English or Foreign): exchange: Lepidoptera or cash, A. S. Cook, 31, Lower-rd., Rotherhithe, S.E.

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